

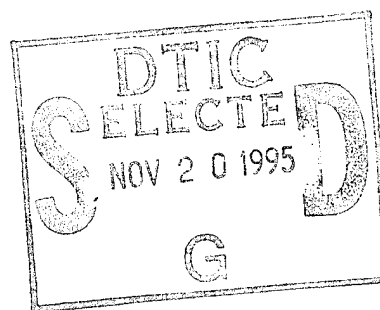
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U.S. ARMY ENVIRONMENTAL CENTER



**WOODBIDGE RESEARCH FACILITY
1995 ASBESTOS SURVEY**

WOODBIDGE, VIRGINIA

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FINAL REPORT

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**WOODBRIIDGE RESEARCH FACILITY
1995 ASBESTOS SURVEY**

WOODBRIIDGE, VIRGINIA

October 6, 1995

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EXECUTIVE SUMMARY

The Army Environmental Center (AEC) contracted Horne Engineering Services, Inc. (Horne Engineering) to perform an asbestos survey for the Woodbridge Research Facility (WRF), Woodbridge, Virginia under contract number DACA31-93-D-0064, delivery order number 0017. Horne Engineering conducted an initial field visit on May 9, 1995, to evaluate potential bulk sample locations. A technical plan was subsequently prepared for, and approved by the AEC. Field work for the asbestos survey portion of this project was conducted on July 5 and 6, 1995.

For the purposes of this survey, all 9"x 9" floor tiles found at the survey site are assumed to contain asbestos. This type of floor tile is present in buildings 101, 201, 202, and 203 at the locations noted on the drawings in Appendix A. A ten-foot diameter area of 9"x 9" tiles in room 108 of building 203 is water damaged. The tiles are warped and loose from their mastic exposing another layer of 9"x 9" tiles below. The asbestos in the tile is not friable and does not pose a threat to human health. According to State and Federal Regulations and Department of Defense Policy, the tile does not have to be removed.

A total of 142 bulk samples were collected and later analyzed by polarized light microscopy coupled with dispersion staining techniques to detect if any of the samples are asbestos containing materials (ACM). An ACM, as defined by the Environmental Protection Agency, is one that contains greater than 1 percent asbestos by volume. Of the 142 bulk samples collected, six are ACM's. None of the ACM present at the WRF is friable or damaged in a way that would require removal.

- One of the nineteen samples collected from building 211 is an ACM. The white duct glue on the duct work above the suspended ceiling in room 307 contains 10 to 20 percent chrysotile asbestos.
- Two of the thirty-eight samples collected from building 203 are ACM. White glue on the duct work in room 102, and the black glue on the duct work in room 225, contain 5 to 10 percent chrysotile asbestos.
- Two of the forty-four samples collected from building 201 are ACM. The 12"x12" beige with white and gray mottling floor tile in the lobby of building 201, contains 5 to 10 percent chrysotile asbestos. The white glue on the duct work above the suspended ceiling in room 166 contains 5 to 15 percent chrysotile asbestos.
- One of the eleven samples collected from building 202 contains asbestos. The 12"x12" green and gray floor tile with white streaks in room 101 contains 5 to 10 percent chrysotile asbestos. The mastic from this tile is also an ACM containing 1 to 5 percent asbestos.

Sample number D032, a 12"x12" floor tile, contains less than 1 percent asbestos according to the laboratory analysis. This 12"x12" floor tile was identified as containing from 1 to 5 percent asbestos in an asbestos survey conducted by Biospherics, Inc. (Biospherics) on August 10, 1990. The discrepancy between these two analyses is small and is most likely due to the limitations of polarized light microscopy in identifying asbestos in floor tiles. As a conservative measure, this material should be managed as an ACM.

Samples collected from buildings 101, 102, 204, 210, and 306, and the samples from the culvert and the exterior of building 203, do not contain asbestos.

Sample number D032, a 12"x12" floor tile, contains less than 1 percent asbestos according to the laboratory analysis. This 12"x12" floor tile was identified as containing from 1 to 5 percent asbestos in an asbestos survey conducted by Biospherics, Inc. (Biospherics) on August 10, 1990. The discrepancy between these two analyses is small and is most likely due to the limitations of polarized light microscopy in identifying asbestos in floor tiles. As a conservative measure, this material should be managed as an ACM.

Samples collected from buildings 101, 102, 204, 210, and 306, and the samples from the culvert and the exterior of building 203, do not contain asbestos.

1.0 INTRODUCTION

The Army Environmental Center (AEC) contracted Horne Engineering Services, Inc. (Horne Engineering) to perform an asbestos survey for the Woodbridge Research Facility (WRF), Woodbridge, Virginia under contract number DACA31-93-D-0064, delivery order number 0017. Field work for this project was conducted on May 9 and July 5 and 6, 1995.

2.0 BACKGROUND

The WRF was established in 1951 as a military radio station. Currently, the WRF is an inactive facility under the command of the Army Research Laboratory, headquartered in Adelphi, Maryland. In the fall of 1995, the facility is scheduled for transfer to the U.S. Fish and Wildlife Service. This asbestos survey is a requirement of this property transfer under the Base Realignment and Closure (BRAC) program, 1991 BRAC list. The WRF consists of nine buildings on 579 acres of government owned land.

The scope of this asbestos survey encompasses the interior of all nine buildings. AEC also requested that an exterior pipe on the southern side of building 203, and a culvert on the northeastern corner of WRF be sampled. The following table generally describes the nine buildings sampled:

Building Number	Current Use	Year Built	Stories	Area Sq/Ft
101	Main Sentry Station	1970	1	1216
102	Sentry Station	1963	1	38
201	Electronic Equipment Facility	1952	1	24306
202	Facility Engineering/Motor Pool	1952	1	15093
203	Electronic Equipment Facility	1952	2	13748
204	Facilities Engineering Storehouse	1964	1	456
210	Sentry Station	1954	1	80
211	Electronic Equipment Facility	1979	3	18000
306	Command and Control Facility	1979	2	1920

3.0 PURPOSE

The purpose of this project is to identify the locations and condition of asbestos containing materials (ACM) within the nine buildings at the WRF and document it for a BRAC transfer of the property.

4.0 SUMMARY OF PREVIOUS STUDIES

4.1 1990 Asbestos Location Survey

During the initial site meeting Horne Engineering was provided with the written portion of an asbestos location survey that was previously conducted by Biospherics, Inc. (Biospherics), on August 10, 1990. This, referred to in this report as the 1990 Asbestos Location Survey, addressed suspected ACM in buildings 201, 202, and 203. The other six buildings present at the WRF were not addressed in the Biospherics survey. None of the enclosures for the report including the drawings showing location of samples and ACM were available for review. According to the Army Research Laboratories (ARL), all friable ACM has been removed from the nine buildings. There is not enough available data to document the Biospherics' survey or subsequent abatements for the upcoming BRAC transfer adequately. The survey for this 1995 project concentrated on verifying the Biospherics findings and documenting the location and extent of asbestos containing materials in the remaining six buildings. The following is a summary of the asbestos survey results from the 1990 Biospherics report.

4.1.1 Building Number 201

Of the forty bulk samples collected in building 201, ten were asbestos-containing. The materials that contained asbestos included fibrous block and corrugated paper pipe insulation, debris from pipe insulation in rooms W148 and E155, pipe fitting insulation on fiberglass insulated lines, and flexible duct joints. The materials sampled that did not contain asbestos were ceiling plaster, plaster overpour on structural beams, 12"x12" interlocking acoustical ceiling tiles, and 2'x4' drop-in acoustical ceiling tiles.

4.1.2 Building Number 202

Of the thirteen bulk samples collected in building 202, four were asbestos-containing. The asbestos containing materials included pipe fitting insulation and a fabric flex joint that was hanging from a heater unit. The materials sampled that did not contain asbestos were textured ceiling material, 12"x12" interlocking acoustical ceiling tiles, and 2'x4' drop-in acoustical ceiling tiles.

4.1.3 Building Number 203

Of the thirty-seven bulk samples collected in building 203, sixteen contained asbestos. The materials found to contain asbestos included pipe insulation and pipe insulation debris in the building's crawl space; stack, boiler, and pipe insulation in the building's boiler room; and pipe insulation, flexible duct joints, one type of floor tile, and ceiling tile mastic in the building's occupied space. The sampled materials that did not contain asbestos were fire brick from the boiler interior, pipe fitting insulation associated with fiberglass insulated piping on the first and second floors, ceiling plaster, and 2'x4' drop-in acoustical ceiling tiles.

Biospherics subcontracted Wayne Insulation to conduct an asbestos abatement of the thermal and domestic water system insulation in buildings 201, 202, and 203. The abatement project was to remove all of the insulation that contained asbestos. Additional work was done in building 101 through change orders coordinated with ARL.

4.2 1991 Enhanced Preliminary Assessment

During the initial site meeting, Horne Engineering was also provided with an Enhanced Preliminary Assessment conducted by Roy E. Weston, Inc. (Weston). The field work for the 1991 Enhanced Preliminary Assessment occurred in September of 1991 and is documented in the report dated March 2, 1992. The Weston report addressed many areas of environmental concern on WRF. However, for the purposes of this report, only the section concerning asbestos (Section 3.11) was reviewed. The following is a summary of the asbestos section of the assessment.

The Weston report stated that all ACM from the domestic waterlines, steam lines, and pipe elbows were abated in the 1980s. The report stated that troweled-on plaster containing asbestos was also removed. The Weston report references contract documents, dated September 29, 1990, describing sampling and subsequent ACM abatement done in buildings 201, 202, and 203. This abatement was done by Capitol Contractors, Inc. The ACM identified and abated in this effort included pipe insulation, lagging, debris on underlying ceiling tiles, and wall board. According to Mr. Steve Rock, of the Army Research Laboratory, Biospherics and Wayne Insulation were subcontracted by Capitol Contractors, Inc. to perform an asbestos location survey and an asbestos abatement for the WRF because of this Enhanced Preliminary Assessment. The results of that work are described in section 4.1 above.

The Enhanced Preliminary Assessment also stated that during field activities additional suspect ACM was identified. These materials included 9"x9" floor tiles in all buildings, pipe insulation on boiler pipes in Building 211, and fire door insulation in Building 201.

5.0 1995 ASBESTOS SURVEY RESULTS

On July 5 and 6, 1995, Bryant Bullock, an environmental scientist and Michael Bowers, an environmental engineer with Horne Engineering, performed an asbestos survey of the WRF. Van Noah, the Project Manager, ensured the survey was conducted according to the Technical Plan approved by the USAEC.

The Technical Plan for this survey was developed after the May 5, 1995 initial site visit and included a Work Plan, a Quality Assurance Project Plan (QAPP), and a site specific Health and Safety Plan. Horne Engineering investigated each of the areas identified as having an ACM in the Biospherics report. Mr. Steve Rock, Industrial Hygienist, of ARL also went on the initial site visit to point out where Wayne Insulation had abated all the friable ACM. Mr. Bryant Bullock, an AHERA accredited asbestos inspector, concluded that all the friable asbestos appeared to have been abated. The water pipe insulation appeared to be new in the areas referred to in the Biospherics report. The pipe joints were insulated with fiberglass in a modern type white formed plastic cover. Some pipes in floor and wall chases were left without insulation. There was no evidence of any remaining asbestos containing insulation.

The Scope of Work for this project did not include areas behind solid walls and assumed that all 9"x9" floor tiles are ACM. The 9"x9" floor tile is present in buildings 101, 201, 202, and 203 at the locations noted on the drawings in Appendix A.

Horne Engineering collected a total of 142 bulk samples for analysis by the polarized light microscopy method according to the Technical Plan. Oneil M. Banks, Inc., in Bel Air, Maryland, analyzed 135 samples. Six of those 135 non-duplicate bulk samples are ACM. None of the six samples analyzed as ACM's are from friable or significantly damaged materials. One out of every twenty samples was collected as a duplicate according to the QAPP. Separate analysis of duplicate samples provides a check on the validity of the sample handling and laboratory results. The seven duplicate samples are numbers C020, D040, D060, E080, E100, F120, and X140. Law Engineering, Inc., in Chantilly, Virginia analyzed the duplicate samples. None of the duplicate samples or the corresponding non-duplicate samples contained asbestos. The locations and extent of the ACM and the 9"x9" floor tile (assumed to be ACM) are depicted on the site plans included in Appendix A.

All of the ACM in the nine buildings at the WRF is non-friable and does not require abatement. All of the samples are assessed as "F - No Immediate Action" or "E - Monitoring" on the USAEC Asbestos Checklist. Both ratings do not require abatement but do require an operations and maintenance plan (O&M plan). The checklists and rating index are covered in more depth in Appendix C. The O&M plan for the WRF should address the duct glue and floor tile ACM's. An O&M plan of this type is required to ensure personnel living and working in areas where ACM is present are aware of it and avoid inadvertently causing the material to become friable. Both the floor tiles and duct glues have asbestiform fiber locked in a non-friable

matrix and do not present a health hazard with normal administrative use.

Building drawings, laboratory documentation, and the USAEC asbestos checklists are included in Appendix A, B, and C of this report. The subsections that follow are arranged by building number. Each building paragraph includes the following information:

- a summary of all ACM identified,
- the hazard ranking system results from the USAEC checklist (Appendix C),
- and a table describing the samples collected and the analysis results.

The abbreviations NAD and NA in the following tables stand for "no asbestos detected" and "not applicable," respectively. Samples that tested positive for asbestos in any amount are shaded.

5.1 Building 101

None of the ten samples collected from building 101 are ACM. The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
B	003	101	102	12"x12" Floor Tile (Gray with White and Gray Mottling)	NAD	NA
B	004	101	102	12"x12" Floor Tile Mastic (Gray with White and Gray Mottling)	NAD	NA
B	005	101	NA	12"x12" Floor Tile (Gray with White and Gray Mottling)	NAD	NA
B	006	101	NA	Black Mastic from 12"x12" Floor Tile (Gray with White and Gray Mottling)	NAD	NA
B	007	101	102	Drywall and Joint Compound	NAD	NA
B	008	101	103	2'x4' Ceiling Tile (Marble Pattern w/ Pinholes)	NAD	NA
B	009	101	NA	2'x4' Ceiling Tile (Marble Pattern w/Pinholes)	NAD	NA
B	010	101	NA	6" Black Cove Molding	NAD	NA

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
B	011	101	NA	Black Mastic from 6" Black Cove Molding	NAD	NA
B	012	101	105	Duct Gasketing Material	NAD	NA

5.2 Building 102

Neither of the two samples collected from building 102 are ACM. The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
A	001	102	NA	Painted Drywall and Joint Compound	NAD	NA
A	002	102	NA	Tan Counter Top Mastic	NAD	NA

5.3 Building 201

The 1990 Biospherics report identified the following ACM in building 201:

- debris from pipe insulation in rooms W148 and E156,
- fibrous block and corrugated paper pipe insulation,
- pipe fitting insulation on fiberglass insulated lines,
- and flexible duct joints,

All of the pipe insulation and other ACM appears to be gone as assessed in the initial site visit. Horne Engineering sampled debris in steam line chases to assure that no ACM was left.

For our survey, two of the forty-four samples collected from building 201 are ACM. The 12"x12" beige with white and gray mottling floor tile in the lobby of building 201 contains 5 to 10 percent chrysotile asbestos. The white glue on the duct work above the suspended ceiling in room 166 contains 5 to 15 percent chrysotile asbestos. The USAEC Asbestos checklist assessment index for both material is "E - Monitoring." The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
E	070	201	N106	2'x4' Ceiling Tile (Mottled Pattern w/Pinholes)	NAD	NA
E	071	201	N106	2'x4' Ceiling Tile (Marbled Pattern w/Pinholes)	NAD	NA
E	072	201	N106	Drywall and Joint Compound	NAD	NA
E	073	201	N106	Debris in Steam Line Chase	NAD	NA
E	074	201	Lobby	12"x12" Floor Tile (Beige w/White and Gray Mottling)	1-10	Chrysotile
E	075	201	Hall	2'x4' Ceiling Tile (Pocked w/Small and Large Pinholes)	NAD	NA
E	076	201	Hall	Brown Mastic	NAD	NA
E	077	201	N101 A	4'x8' Primary Ceiling	NAD	NA
E	078	201	N101 A	Tan Plaster Wall Material	NAD	NA
E	079	201	N101	Drywall Plaster Compound	NAD	NA
E	080			Duplicate of E081	NAD	NA
E	081	201	N101	White Thermal System Pipe Sealant	NAD	NA
E	082	201	N107	12"x12" Acoustical Tile (½" Dot Pattern)	NAD	NA
E	083	201	N107	Brown Mastic from 12"x12" Acoustical Tile (½" Dot Pattern)	NAD	NA
E	084	201	N107	2'x4' Ceiling Tile (Straight Wormy Pattern w/Small and Large Pinholes)	NAD	NA
E	085	201	N107	2'x4' Ceiling Tile (Marbled w/Many Pinholes)	NAD	NA

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
E	086	201	N107	2'x4' Ceiling Tile (Bone Colored, Marbled, w/Pinholes)	NAD	NA
E	087	201	N107	4" Black Cove Molding	NAD	NA
E	088	201	N107	Brown Mastic from 4" Black Cove Molding	NAD	NA
E	089	201	N109	6" Black Cove Molding	NAD	NA
E	090	201	N109	Brown Mastic from 6" Black Cove Molding	NAD	NA
E	091	201	N111	Plaster Wall	NAD	NA
E	092	201	N101	Electrical Chase Debris	NAD	NA
E	093	201	N116	Drywall and Joint Compound	NAD	NA
E	094	201	N118	Brown Mastic Above Ceiling	NAD	NA
E	095	201	N118	12"x12" Floor Tile (Beige w/Brown and White Mottling)	NAD	NA
E	096	201	W154	Drywall and Joint Compound	NAD	NA
E	097	201	E157	4" Brown Cove Molding	NAD	NA
E	098	201	E157	Mastic from 4" Brown Cove Molding	NAD	NA
E	099	201	E157	Drywall and Joint Compound	NAD	NA
E	100			Duplicate of E101	NAD	NA
E	101	201	E169	12"x12" White Acoustical Tile (1" Dot Spacing)	NAD	NA
E	102	201	E169	Brown Mastic from 12"x12" White Acoustical Tile (1" Dot Spacing)	NAD	NA
E	103	201	E166	12"x12" White Acoustical Tile (½" Spacing)	NAD	NA

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
E	104	201	E166	12"x12" Floor Tile (Beige w/White and Gray Mottling)	NAD	NA
E	105	201	E166	Wall Plaster	NAD	NA
E	106	201	E168	Particle Board Tan Mastic	NAD	NA
E	107	201	E166	White Duct Glue	5-15	Chrysotile
E	108	201	E166	Drywall and Joint Compound	NAD	NA
E	109	201	E166	Green Painted Wall Plaster	NAD	NA
E	110	201	Hall (S120)	Painted Drywall and Joint Compound	NAD	NA
E	111	201	Hall (W148)	2'x4' Ceiling Tile (Mottled w/Pinholes)	NAD	NA
E	112	201	W148	Painted Drywall and Joint Compound	NAD	NA
E	113	201	W151	2'x4' Ceiling Tile (Pocked w/Small and Large Pinholes)	NAD	NA
E	114	201	W140	4" Brown Cove Molding	NAD	NA
E	115	201	Maint.	2'x4' Ceiling Tile (Wormy Pattern w/Large Pinholes and Woven Texture)	NAD	NA

5.4 Building 202

The Biospherics report identified pipe fitting insulation and a fabric flex joint hanging from a heater unit as ACM. All of the pipe insulation and other ACM appears to be gone as assessed in the initial site visit. There were no fabric flex joints hanging from any heater units.

One of the eleven samples collected from building 202 is ACM. The 12"x12"green and gray floor tile with white streaks in room 101 contains 5 to 10 percent chrysotile asbestos. The mastic from this tile is also an ACM containing 1 to 5 percent asbestos. The mastic and the tile were collected as one sample because they could not be separated in the field. The materials were separated at the analysis laboratory. The mastic is identified separately as sample number F123A

in the table below. Both materials were recorded on one USAEC Asbestos checklist but put in the summary as separate lines. The USAEC Asbestos checklist assessment index for both materials is "E - Monitoring." The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
F	116	202	121	4" Black Cove Molding	NAD	NA
F	117	202	121	Brown Mastic from 4" Black Cove Molding	NAD	NA
F	118	202	117	Gray, Fibrous Debris	NAD	NA
F	119	202	115	Painted Drywall and Joint Compound	NAD	NA
F	120			Duplicate of F121	NAD	NA
F	121	202	103C	12"x12" White Acoustical Tile w/Small Pinholes	NAD	NA
F	122	202	101	Drywall and Joint Compound	NAD	NA
F	123	202	101	12"x12" Floor Tile (Green and Gray w/White Streaks)	5-10	Chrysotile
F	123A	202	101	Black Mastic from 12"x12" Floor Tile (Green and Gray w/White Streaks)	1-5	Chrysotile
F	124	202	103	Ceiling Material	NAD	NA
F	125	202	114	4" Black Cove Molding	NAD	NA
F	126	202	114	Brown Mastic from 4" Black Cove Molding	NAD	NA
F	127	202	114	Drywall and Joint Compound	NAD	NA

5.5 Building 203

The 1990 Biospherics report identified the following ACM in building 203:

- pipe insulation and pipe insulation debris in various areas throughout the building,
- and flexible duct joints, floor tile, and ceiling tile mastic in the occupied space.

All of the pipe insulation appears to be gone as assessed in the initial site visit. The boiler room has newer looking insulation and new labeling suggesting all the insulation was replaced. The floor tile analyzed as ACM by Biospherics contained less than 1 percent in the sample collected as part of this survey. The discrepancy between these two analyses is small and is most likely due to the limitations of polarized light microscopy (PLM), a visual form of microscopy, in identifying asbestos in floor tiles. The extremely small size and clumped distribution of asbestos fibers in floor tile makes them very difficult to detect using visual microscopy. Biospherics sampled this 12"x12" floor tile in three locations of the main entrance. The results of the analysis were 1 to 2 percent asbestos in two locations and 2 to 5 percent asbestos in the other.

The results of our survey show two of the thirty-eight samples collected from building 203 as ACM. The white glue on the duct work in room 102, and the black glue on the duct work in room 225, contain 5 to 10 percent chrysotile asbestos. The USAEC Asbestos checklist assessment index for both materials is "F - No Immediate Action." The floor tile collected as sample number D032 had detectable amounts of asbestos but not enough to classify it as ACM. Because the same material was analyzed as ACM by Biospherics, Horne Engineering decided to conservatively classify the material as an ACM. The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
D	032	203	Main Ent.	12"x12" Floor Tile (Tan w/Orange, Brown, and White Mottling)	<1	Chrysotile
D	033	203	Main Ent.	Black Mastic from 12"x12" Floor Tile (Tan w/Orange, Brown, and White Mottling)	NAD	NA
D	034	203	Main Ent.	Staircase Tread	NAD	NA
D	035	203	Main Ent.	Mastic from Staircase Tread	NAD	NA

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
D	036	203	117	Tan Plaster Base Material	NAD	NA
D	037	203	117	White Drywall Material Over Tan Plaster	NAD	NA
D	038	203	124	Brown Mastic from 12"x16" Acoustical Tile (3/8" Dot Pattern)	NAD	NA
D	039	203	124	12"x16" Acoustical Tile (3/8" Dot Pattern)	NAD	NA
D	040			Duplicate of D041	NAD	NA
D	041	203	124	2' x 2' Floor Tile	NAD	NA
D	042	203	Main Ent.	6" Black Cove Molding	NAD	NA
D	043	203	Main Ent.	Tan Mastic from 6" Black Cove Molding (Outer Layer)	NAD	NA
D	044	203	Main Ent.	Black Mastic from 6" Black Cove Molding (Inner Layer)	NAD	NA
D	045	203	108	Tan Plaster Base Material	NAD	NA
D	046	203	108	White Drywall Material Over Tan Plaster	NAD	NA
D	047	203	108	Drywall and Joint Compound	NAD	NA
D	048	203	102	Tan Duct Glue	NAD	NA
D	049	203	102	White Duct Glue	5-10	Chrysotile
D	050	203	102	Brown Mastic	NAD	NA
D	051	203	102	2'x4' Ceiling Tile (Mottled Pattern w/Small Pinholes)	NAD	NA
D	052	203	125	4" Black Cove Molding	NAD	NA
D	053	203	125	Brown Mastic from 4" Black Cove Molding	NAD	NA

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
D	054	203	124	4" Brown Cove Molding	NAD	NA
D	055	203	124	Brown Mastic from 4" Brown Cove Molding	NAD	NA
D	056	203	225	Drywall and Joint Compound	NAD	NA
D	057	203	225	Plaster	NAD	NA
D	058	203	225	Black Duct Glue	5-10	Chrysotile
D	059	203	224	6" Black Cove Molding	NAD	NA
D	060			Duplicate of D061	NAD	NA
D	061	203	224	Brown Mastic from 6" Black Cove Molding	NAD	NA
D	062	203	219	Brown Mastic from Corkboard	NAD	NA
D	063	203	2nd Floor Hall	2'x4' Ceiling Tile (Mottled Pattern w/Pinholes)	NAD	NA
D	064	203	2nd Floor Hall	2'x4' Ceiling Tile (Marbled Pattern w/Pinholes)	NAD	NA
D	065	203	2nd Floor Hall	2'x4' Ceiling Tile (Wormy Pattern w/Pinholes)	NAD	NA
D	066	203	210	Beige, Painted (2 coats) Drywall and Joint Compound	NAD	NA
D	067	203	205	Drywall and Joint Compound	NAD	NA
D	068	203	210	2'x4' Ceiling Tile (Mottled Pattern w/Pinholes)	NAD	NA
D	069	203	202	Tan Pressboard	NAD	NA

5.6 Building 204

Neither of the two samples collected from building 204 contains asbestos. The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
H	130	204	NA	Concrete Floor	NAD	NA
H	131	204	NA	Concrete Ceiling	NAD	NA

5.7 Building 210

Neither of the two samples collected from building 210 is ACM. The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
G	128	210	NA	12"x12" Floor Tile (Beige w/Black & White Mottling)	NAD	NA
G	129	210	NA	Tan Mastic from 12"x12" Floor Tile (Beige w/Black & White Mottling)	NAD	NA

5.8 Building 211

One of the nineteen samples collected from building 211 is an ACM. The white glue on the duct work above the suspended ceiling in room 307 contains 10 to 20 percent chrysotile asbestos. The USAEC Asbestos checklist assessment index for the material is "F - No Immediate Action." The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
C	013	211	315	2'x4' Ceiling Tile (Wormy Pattern w/Large Pinholes)	NAD	NA
C	014	211	Hall	2'x4' Ceiling Tile (Wormy Pattern w/Small Pinholes)	NAD	NA
C	015	211	307	Drywall and Joint Compound	NAD	NA

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
C	016	211	307	White Duct Glue	10-20	Chrysotile
C	017	211	310	Troweled Window Material	NAD	NA
C	018	211	307	4" High Brown Cove Molding	NAD	NA
C	019	211	307	Black Mastic from 4" High Brown Cove Molding	NAD	NA
C	020			Duplicate of C021	NAD	NA
C	021	211	Hall	2'x4' Ceiling Tile (Mottled Pattern w/Small Pinholes)	NAD	NA
C	022	211	310	12"x12" Floor Tile (Light Tan w/Brown Mottling)	NAD	NA
C	023	211	310	Brown Mastic from 12"x12" Floor Tile (Light Tan w/Brown Mottling)	NAD	NA
C	024	211	113	12"x12" Floor Tile (Beige w/Brown and White Mottling)	NAD	NA
C	025	211	112	Drywall and Joint Compound	NAD	NA
C	026	211	113	Fire Door Insulation	NAD	NA
C	027	211	103	Brown Mastic from Wall	NAD	NA
C	028	211	103	3'x3' Floor Tile	NAD	NA
C	029	211	Mech. Room	Duct Gasketing Material	NAD	NA
C	030	211	Mech. Room	Troweled Material on Ceiling	NAD	NA
C	031	211	Mech. Room	Boiler Jacket Insulation	NAD	NA

5.9 Building 306

None of the eight samples collected from building 306 contain asbestos. The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
I	132	306	NA	12"x12" Floor Tile (Rust Colored w/Brown and Cream Mottling)	NAD	NA
I	133	306	NA	Mastic from 12"x12" Floor Tile (Rust Colored w/Brown and Cream Mottling)	NAD	NA
I	134	306	NA	Brown Stair Tread	NAD	NA
I	135	306	NA	Brown Mastic from Brown Stair Tread	NAD	NA
I	136	306	NA	4" Brown Cove Molding	NAD	NA
I	137	306	NA	Mastic from 4" Brown Cove Molding	NAD	NA
I	138	306	NA	Painted Drywall and Joint Compound	NAD	NA
I	139	306	NA	Painted Drywall	NAD	NA

5.10 Exterior Samples

The sample collected from the culvert and from the thermal pipe insulation on the south side of building 203 are not ACM. The sample descriptions and analysis results are presented below.

Sample	Number	Building	Room	Description	% Asbestos	Type of Asbestos
X	140	NA	NA	Duplicate of X-141	NAD	NA
X	141	NA	NA	Culvert/Old Chimney	NAD	NA
X	142	203	NA	Thermal Insulation at South End Exterior	NAD	NA

6.0 CONCLUSIONS AND RECOMMENDATIONS

The 9"x9" floor tile assumed to be an ACM is present in buildings 101, 201, 202, and 203 at the locations noted on the drawings in Appendix A. This floor tile is in good condition except a water damaged area in room 108 of building 203. The water damaged area is ten feet in diameter with loose warped tiles exposing another layer of 9"x 9" tiles underneath them. The asbestos in the tile is not friable and does not pose a threat to human health. According to State and Federal Regulations, the tile does not have to be removed. According to the 31 October 1994 memorandum from the Office of the Under Secretary of Defense, Subject: Asbestos, Lead Paint and Radon Policies at BRAC Properties, the ACM is not to be removed. ACM is only removed when it is "of a type and condition that is not in compliance with applicable laws, regulation, and standards, or if it poses a threat to human health at the time of transfer of the property." Horne Engineering completed a USAEC Asbestos checklist for the 9"x9" tile overall and for the water damaged area, both have an assessment index of "E - Monitoring."

The asbestos containing material at WRF can be safely managed in place after an effective O&M Plan is developed. The highest USAEC Assessment Index of any of the six ACM's is "E - Monitoring." The guidance for E rated ACM, according to the checklist in Appendix C, is:

Continue Special O&M program. Take steps to prevent damage to the ACM. Monitor the condition of all ACM frequently.

According to NESHAP 40 CFR Part 61 Subpart M, if renovation or demolition is to occur in area with ACM, and these materials may become friable as a result of the construction activities, it should be abated before it is disturbed by construction activities.

Recommend an O&M Plan be developed for WRF and implemented. The ACM found as part of this survey can be safely managed in place with a proper O&M Plan.

APPENDIX A

Figures showing sampling locations for each building
arranged in building number order:

Building 101

Building 102

Building 201

Building 202

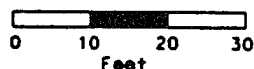
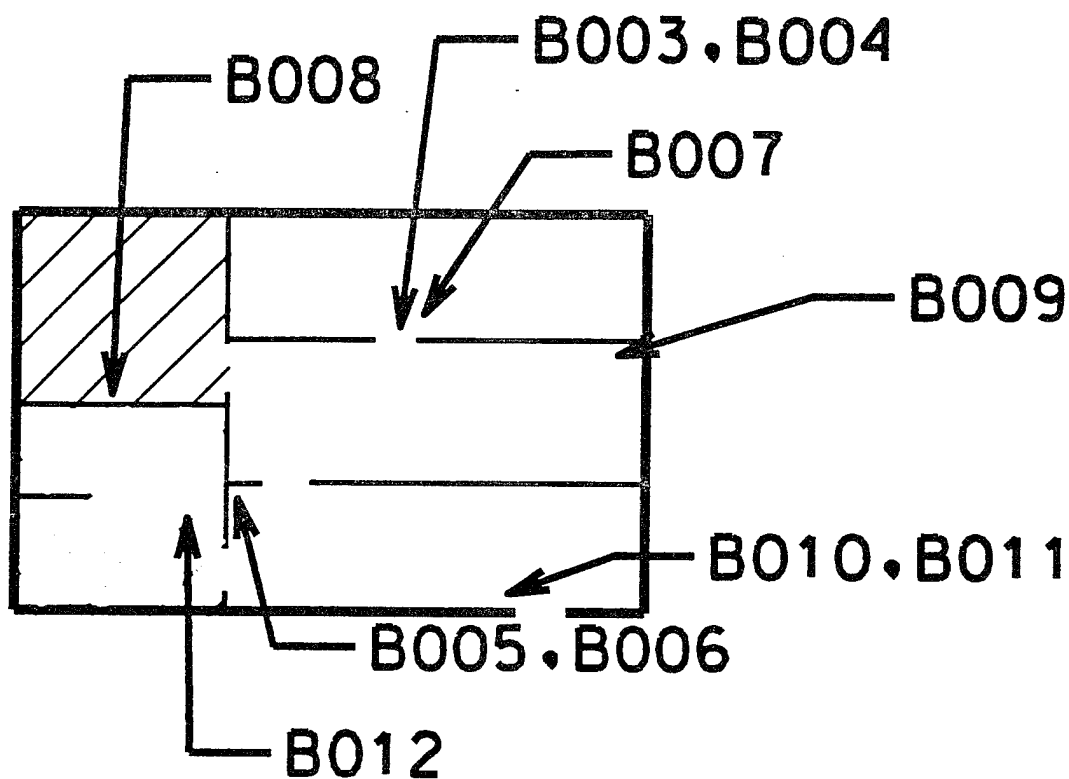
Building 203

Building 204

Building 210

Building 211

Building 306

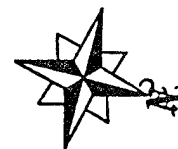


Denotes Assumed ACM/9x9 Floor Tile

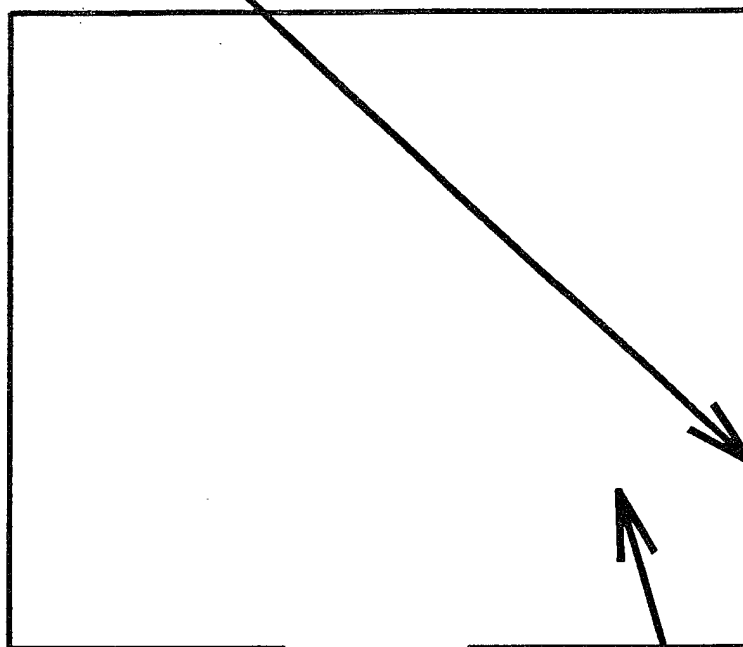
Horne Engineering Services, Inc

Building # 101

Floor plan depicting location
of asbestos samples



A001



A002

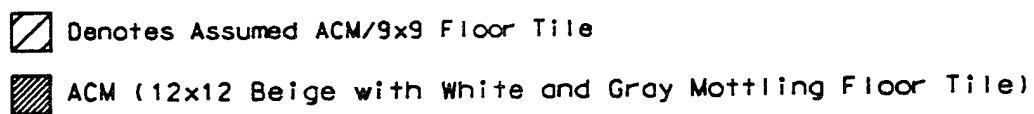


Feet

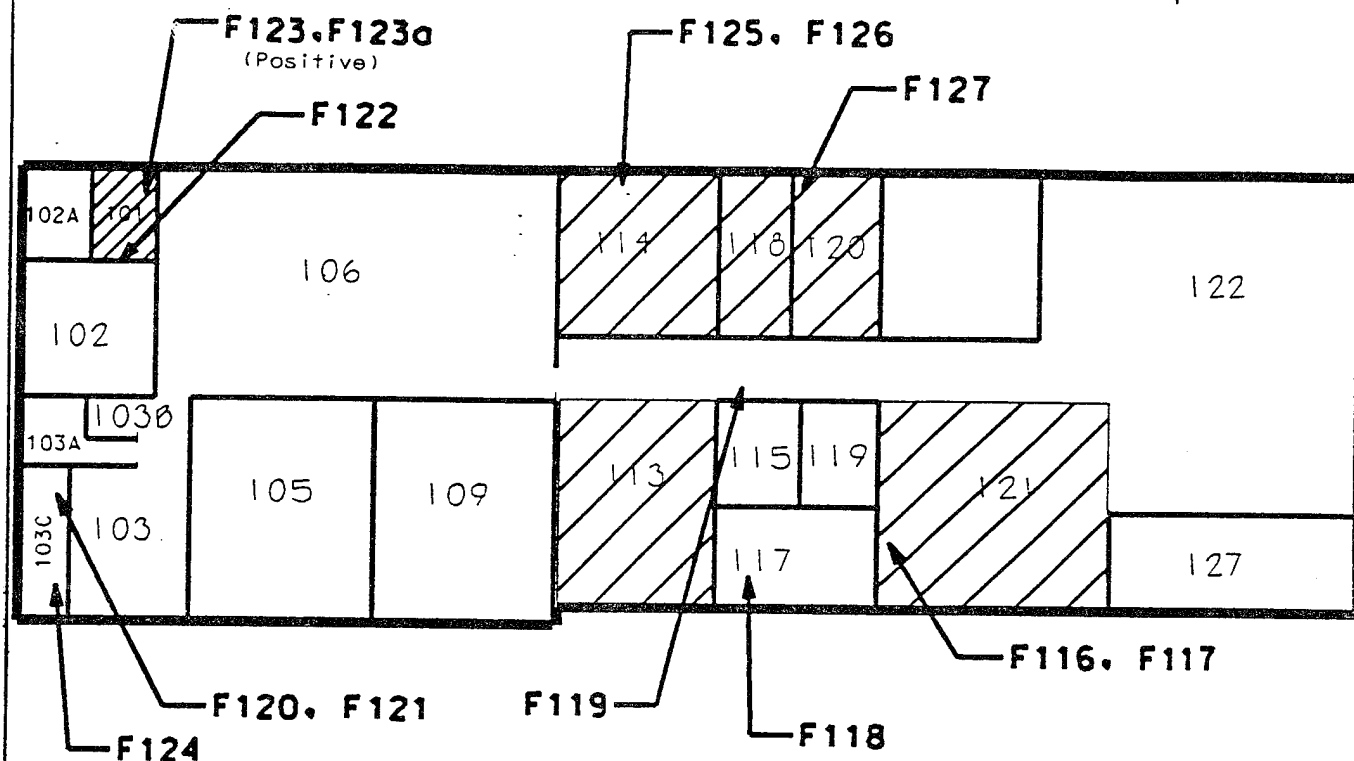
Horne Engineering Services, Inc.

Building # 102

Floor plan depicting location
of asbestos samples



Floor plan depicting location
of asbestos samples



0 15 30 45
Feet



ACM (12 x 12 Green and Gray Floor Tile with White Streaks)

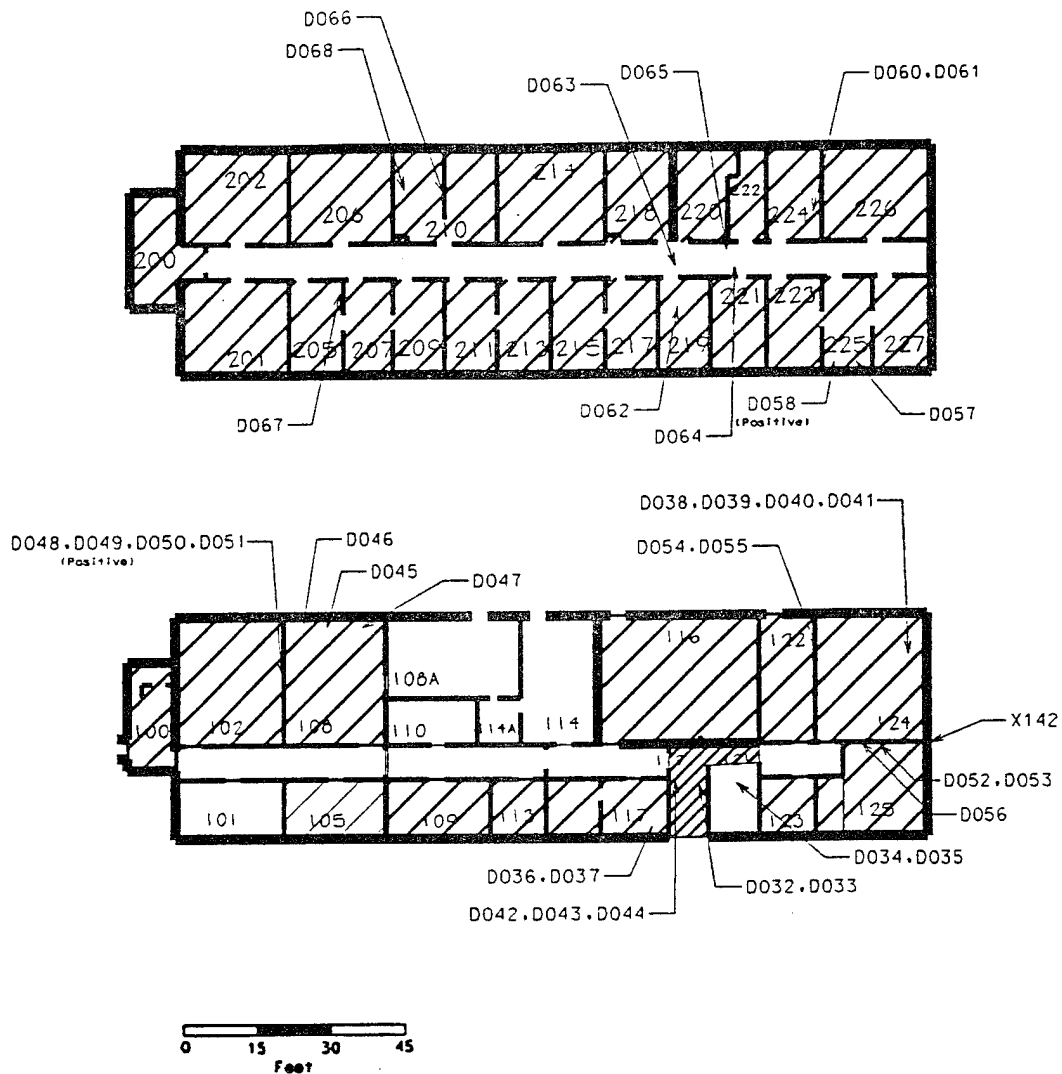


Denotes Assumed ACM/9x9 Floor Tile

Horne Engineering Services, Inc.

Building # 202

Floor plan depicting location
of asbestos samples



Denotes Assumed ACM/9x9 Floor Tile

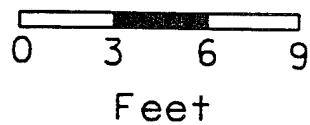
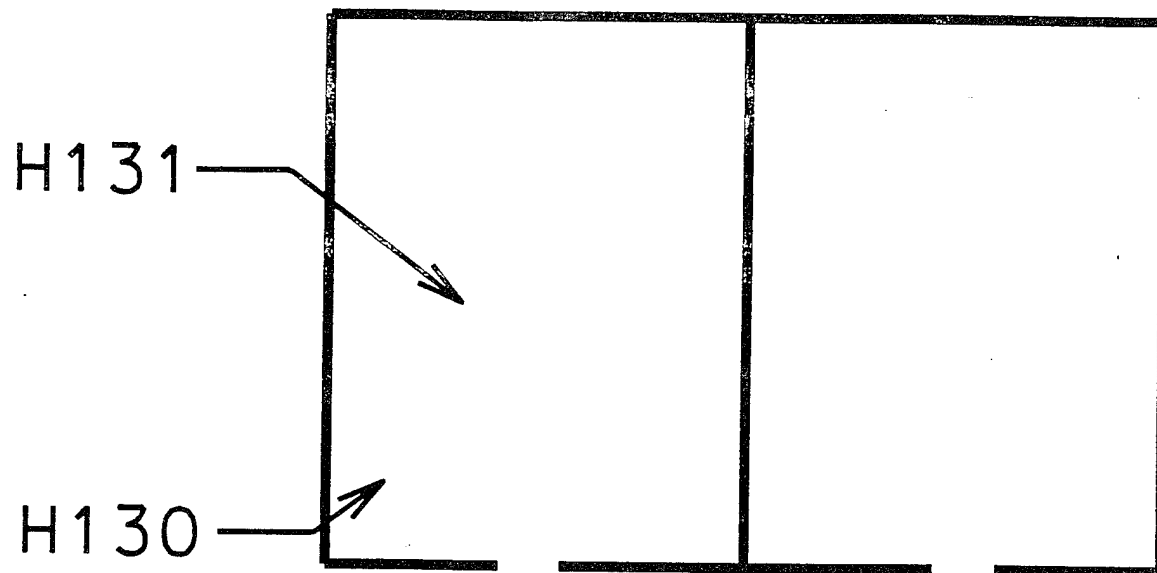


ACM (12 x 12 Tan Floor Tile with Orange, Brown, and White Mottling)

Horne Engineering Services, Inc.

Building # 203

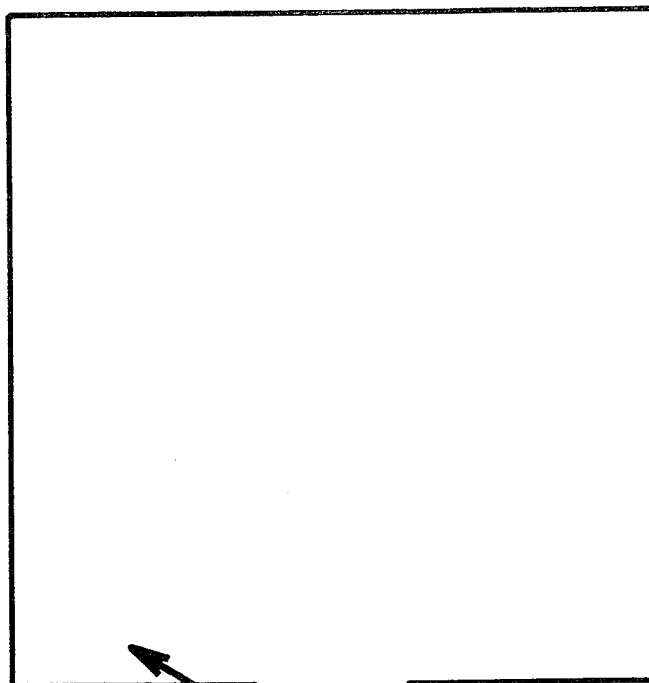
Floor plan depicting location
of asbestos samples



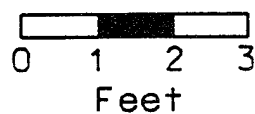
Horne Engineering Services, Inc.

Building # 204

Floor plan depicting location
of asbestos samples



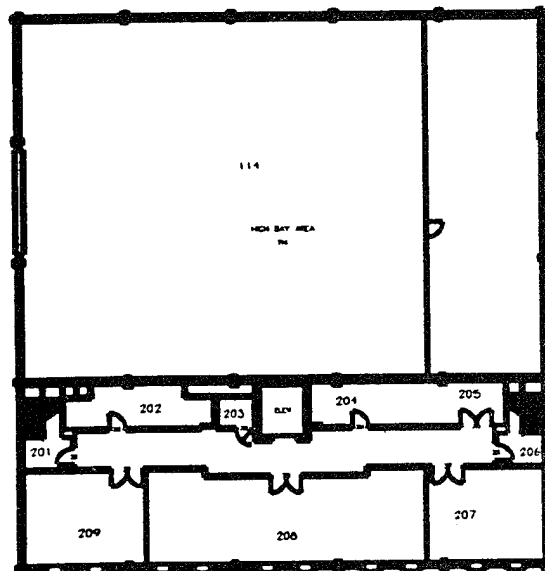
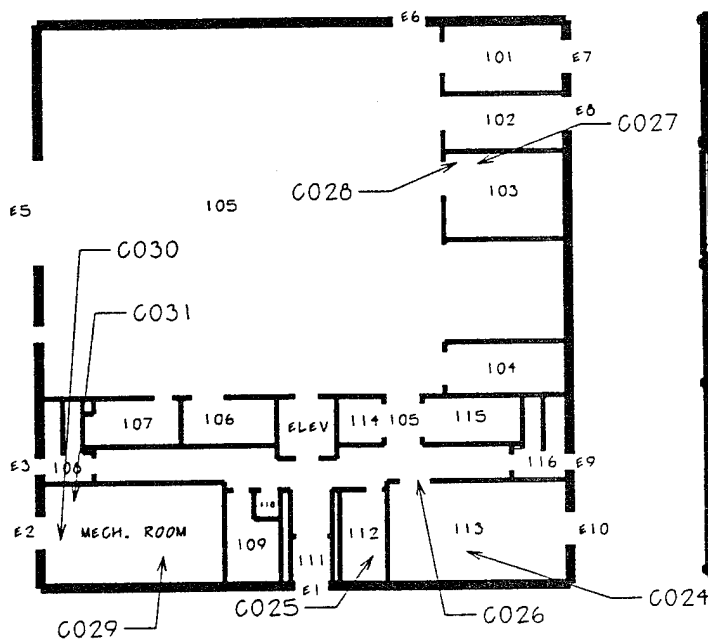
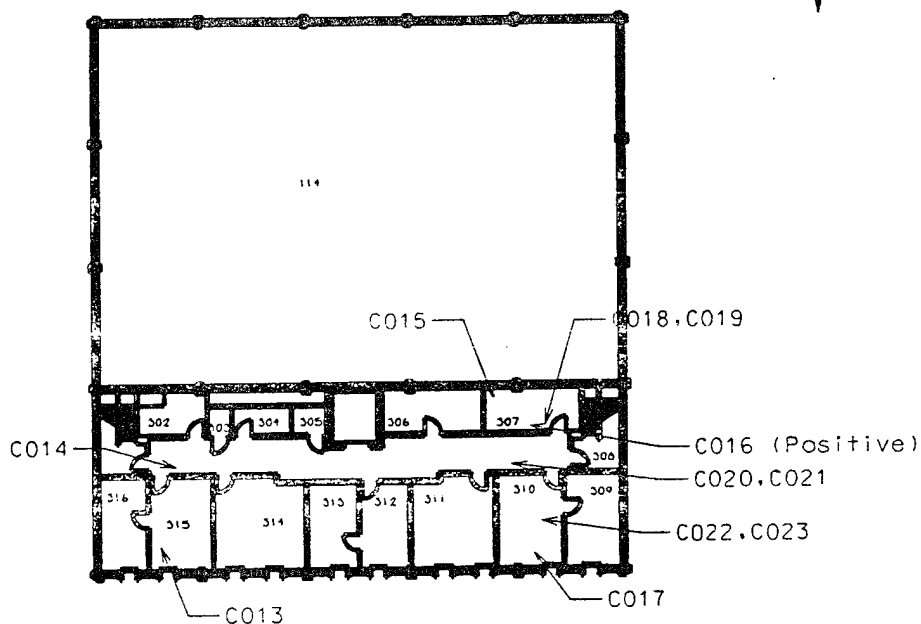
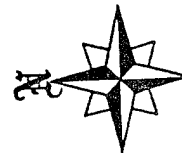
G128. G129



Horne Engineering Services, Inc.

Building # 210

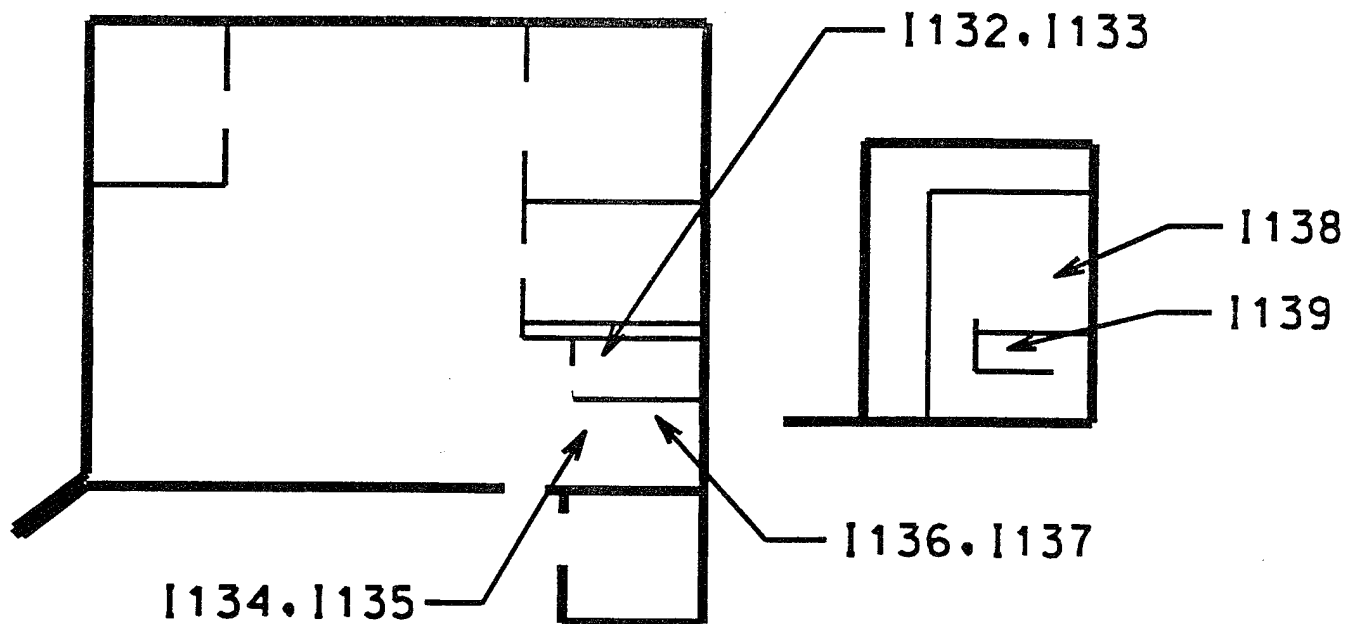
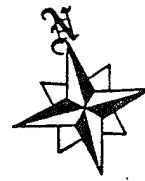
Floor plan depicting location
of asbestos samples



Horne Engineering Services, Inc.

Building # 211

Floor plan depicting location
of asbestos samples



0 20 40 60
Feet

Horne Engineering Services, Inc.

Building # 306

Floor plan depicting location
of asbestos samples

APPENDIX B

Laboratory analysis results and chain of custody forms (in the attached appendix if provided with this copy)

The laboratory results are also summarized in the body of the report and reflected in the USAEC Asbestos Checklist summary sheets in Appendix C.

If this copy does not have the separately bound chain of custody forms and USAEC checklists, they are available at AEC.

Oneil M. Banks, Inc.

Industrial Hygiene/Toxicology
(410) 879-4676 / FAX: (410) 879-4686

336 South Main Street
Bel Air, Maryland 21014

August 3, 1995

Mr. Bryant Bullock
Horne Engineering and Environmental Services
4501 Ford Avenue, Suite 1100
Alexandria, VA 22302

Dear Mr. Bullock:

The following are the results of analysis of the sample submitted, for type and amount of asbestos. The analysis was performed using a polarized light optical microscopy and dispersion staining, using the "Interim Method for the Determination of Asbestos in Bulk Insulation Samples" found in Appendix A to Subpart F in 40 CFR 763.

DATE COLLECTED: 07/05/95 COLLECTOR: CLIENT ANALYST: RLT
LOCATION: WOODBRIDGE RESEARCH DATE ANALYZED: 07/10-07/15/95
FACILITY &08/03/95

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-003	A001 Drywall w/ Compound Bldg 102	NAD	05-15%CELL 05-15%OTHR	60-70%OTHR
0795-004	A002 Countertop Mastic Bldg 102	NAD	----	100%TARA
0795-005	B003 12x12 Floor Tile Bldg 101	NAD	01-10%CELL 01-05%SYNC	75-85%TICO
0795-006	B004 Floor Tile Mastic Bldg 101	NAD	01-10%CELL	80-90%TARA
0795-007	B005 12x12 Floor Tile Bldg 101	NAD	01-10%CELL	80-90%TICO
0795-008	B006 Floor Tile Mastic Bldg 101	NAD	01-10%CELL	80-90%TARA
0795-009	B007 Drywall/Joint Compound Bldg 101 Rm 102	NAD	05-15%OTHR 10-20%CELL	60-70%OTHR
0795-010	B008 2x4 Ceiling Tile Bldg 101 Rm 103	NAD	30-40%CELL 30-40%MWOL	10-20%OTHR

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-011	B009 2x4 Ceiling Tile Bldg 101 Lobby	NAD	30-40%CELL 30-40%MWOL	10-20%OTHR
0795-012	B010 6" Cove Mold. Bldg 101, Lobby	NAD	----	100%OTHR
0795-013	B011 Cove Mastic Bldg 101, Lobby	NAD	----	100%TARA
0795-014	B012 Gasket/ Woven Material Bldg 101, Rm 105	NAD	70-80%CELL	10-20%OTHR
0795-015	C013 2x4 Ceiling Tile Bldg 211 Room 315	NAD	30-40%CELL 30-40%FBGL	10-20%OTHR
0795-016	C014 2x4 Ceiling Tile Bldg 211, 3rd Floor Hallway	NAD	30-40%CELL 30-40%FBGL	10-20%OTHR
0795-017	C015 Drywall Bldg 211 Room 307	NAD	15-25%CELL 05-10%OTHR	55-65%OTHR
0795-018	C016 Duct Binding Material Bldg 211 Room 307	10-20%CHRY	05-10%CELL	65-75%OTHR
0795-019	C017 Trowelled on Window Material Bldg 211 Room 310	NAD	----	100%OTHR
0795-020	C018 4" Brown Cove Molding Bldg 211 Room 307	NAD	----	100%OTHR
0795-021	C019 Cove Mastic Bldg 211 Rm 307	NAD	----	100%TARA
0795-022	C020 DELETE-BAB			
0795-023	C021 2x4 Ceiling Tile Bldg 211 3rd Fl Hallway	NAD	30-40%CELL 30-40%MWOL	10-20%OTHR
0795-024	C022 12x12 Fl Tile Bldg 211 Rm 310	NAD	----	100%TICO
0795-025	C023 Fl Tile Mastic Bldg 211 Rm 310	NAD	01-10%CELL	80-90%TARA

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-026	C024 12x12 Floor Tile Bldg 211 Rm 113	NAD	10-15%CELL	75-85%TICO
0795-027	C025 Ceiling Dry- wall, Bldg 211 Room 112	NAD	10-20%OTHR	70-80%OTHR
0795-028	C026 Fire Door Ins. Bldg 211 Rm 113	NAD	100%FBGL	----
0795-029	C027 Brown Mastic Bldg 211 Rm 103	NAD	----	100%TARA
0795-030	C028 3'x3' Floor Tile Bldg 211 Room 103	NAD	----	100%TICO
0795-031	C029 Duct Mastic Material/Mech Room	NAD	20-30%SYNC	60-70%TARA
0795-032	C030 Trowelled Ceiling Material Mech. Room	NAD	01-05%CELL	85-95%OTHR
0795-033	C031 Boiler Jacket Insulation Mech Rm	NAD	55-65%MWOL	25-35%OTHR
0795-034	D032 12x12 Floor Tile Bldg 203 Main Entrance	<1%CHRY	01-10%CELL	80-90%TICO
0795-035	D033 Floor Tile Mastic Bldg 203 Main Entrance	NAD	01-10%CELL	80-90%OTHR
0795-036	D034 Stair Case Tread Bldg 203 Main Entrance	NAD	----	100%OTHR
0795-037	D035 Stair Tread Mastic Bldg 203 Main Entrance	NAD	----	100%TARA
0795-038	D036 Plaster Wall Material Bldg 203 Room 117	NAD	01-05%CELL 01-05%SYNC	80-90%OTHR
0795-039	D037 Drywall Compound Over Plas. Bldg 203 Rm 117	NAD	01-05%CELL	90-95%OTHR

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-040	D038 Acoustical Tile 12x16 Bldg 203 Room 124	NAD	----	100%TARA
0795-041	D039 Acoustical Tile Mastic	NAD	----	100%OTHR
0795-042	D041 2'x2' Floor Tile Bldg 203 Room 124	NAD	05-15%CELL	75-85%TICO
0795-043	D042 Cove Moulding Main Entrance Bldg 203	NAD	----	100%OTHR
0795-044	D043 Cove Moulding Mastic/Outer	NAD	----	100%TARA
0795-045	D044 Cove Moulding Mastic/Inner	NAD	01-10%CELL	80-90%TARA
0795-046	D045 Plaster Wall Material Bldg 203 Room 108	NAD	----	100%OTHR
0795-047	D046 Drywall Compound O/Plaster Bldg 203 Rm 108	NAD	----	100%OTHR
0795-048	D047 Drywall Bldg 203 Room 108	NAD	05-10%OTHR 10-20%CELL	60-70%OTHR
0795-049	D048 Duct Binding Material(Tan) Bldg 203 Rm 102	NAD	----	100%OTHR
0795-050	D049 Duct Binding Material(White) Bldg 203 Rm 102	5-10%CHRY	05-10%CELL	70-80%OTHR
0795-051	D050 Brown Mastic on Ceiling Bldg 203 Room 102	NAD	01-10%CELL	80-90%TARA
0795-052	D051 2x4 Ceiling Tile Bldg 203 Room 102	NAD	40-50%CELL 20-30%FBGL	10-20%OTHR
0795-053	D052 4" Black Cove Molding Bldg 203 Room 125	NAD	----	100%OTHR

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-054	D053 Black Cove Mastic Bldg 203 Room 125	NAD	05-10%CELL	80-90%TARA
0795-055	D054 4" Brown Cove Molding Bldg 203 Room 124	NAD	----	100%OTHR
0795-056	D055 Brown Cove Mastic	NAD	01-05%CELL	90-95%TARA
0795-057	D056 Drywall Bldg 203 Rm 125	NAD	05-10%OTHR 20-30%CELL	50-60%OTHR
0795-058	D057 Ceiling Plast. Bldg 203 Rm 225 Tan Cemen. Layer	NAD	01-10%CELL	80-90%OTHR
	White Painted Layer	NAD	----	100%OTHR
	White Chalky Layer	NAD	----	100%OTHR
0795-059	D058 Black Duct Binding Bldg 203 Room 225	05-10%CHRY	05-10%CELL	70-80%OTHR
0795-060	D059 6" Black Cove Molding Bldg 203 Room 224	NAD	----	100%OTHR
0795-061	D061 Brown Mastic Bldg 203 Rm 224	NAD	----	100%TARA
0795-062	D062 Black Mastic on Cork Bldg 203 Room 219	NAD	----	100%OTHR
0795-063	D063 2x4 Ceiling Tile Bldg 203 2nd Fl Hall	NAD	40-50%CELL 20-30%MWOL	10-20%OTHR
0795-064	D064 2x4 Ceiling Tile Bldg 203 2nd Fl Hall	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-065	D065 2x4 Ceiling Tile Bldg 203 2nd Fl Hall	NAD	20-30%MWOL 20-30%FBGL	30-40%OTHR
0795-066	D066 Drywall Bldg 203 Rm 210	NAD	10-20%CELL 10-20%SYNC	50-60%OTHR

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-067	D067 Drywall	NAD	10-20%CELL 05-10%SMNC	60-70%OTHR
0795-068	D068 2x4 Ceiling Tile Bldg 203 Room 210	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-069	D069 Press Board Bldg 203 Rm 202	NAD	90-95%CELL	01-05%OTHR
0795-070	E070 2x4 Ceiling Tile Bldg 201 Room 106	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-071	E071 2x4 Ceiling Tile Bldg 201 Room 106	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-072	E072 Drywall Bldg 201 Rm 106	NAD	05-10%OTHR 10-20%CELL	60-70%OTHR
0795-073	E073 Debris in Steamline Chase Bldg 201 Rm 106	NAD	10-20%OTHR 20-30%SYNC 10-20%CELL 05-10%FBGL	10-20%OTHR
0795-074	E074 12"x12" Floor Tile Bldg 201 Main Ent.	01-10%CHRY	01-10%OTHR	70-80%OTHR
0795-075	E075 2x4 Ceiling Tile Bldg 201 Main Entrance	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-076	E076 Brown Mastic Bldg 201 Main Ent.	NAD	----	100%TARA
0795-077	E077 Primary Ceil. Material Bldg 201 Room N101A	NAD	10-20%CELL 05-15%OTHR	55-65%OTHR
0795-078	E078 Plaster Wall Material Bldg 201 Room N101	NAD	10-20%CELL	70-80%OTHR
0795-079	E079 Drywall Comp. Over Plaster Bldg 201 Room N101	NAD	----	100%OTHR
0795-080	E081 TSI Pipe Sealant Rm N101A	NAD	----	100%OTHR

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-081	E082 12"x 12" Acoustical Tile Bldg 201 Rm N107A	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-082	E083 Brown Mastic Bldg 201 Rm N107A	NAD	----	100%TARA
0795-083	E084 2x4 Ceiling Tile Bldg 201 Rm N107A	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-084	E085 2x4 Ceiling Tile Bldg 201 Room N107A	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-085	E086 2x4 Ceiling Tile Bldg 201 Room N107B	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-086	E087 4" Black Cove Molding O/S Rm N107A	NAD	----	100%OTHR
0795-087	E088 Brown Mastic	NAD	----	100%TARA
0795-088	E089 6" Black Cove Molding Bldg 201 Room N109	NAD	----	100%OTHR
0795-089	E090 Cove Brown Mastic	NAD	05-10%OTHR	80-90%TARA
0795-090	E091 Plaster Wall Bldg 201 Rm N111	NAD	05-10%CELL	80-90%OTHR
0795-091	E092 Debris in Electrical Chase Rm N111	NAD	05-10%CELL 05-10%SYNC	70-80%OTHR
0795-092	E093 Drywall Rm N116 Bldg 201	NAD	05-15%CELL 05-15%SYNC	60-70%OTHR
0795-093	E094 Brown Mastic Bldg 201 Rm N118	NAD	----	100%TARA
0795-094	E095 12"x12" Floor Tile Bldg 201 Room N118	NAD	01-10%CELL	80-90%TICO
0795-095	E096 Drywall, Hall North Wing	NAD	10-20%CELL 05-10%OTHR	60-70%OTHR

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-096	E097 4" Brown Cove Molding Bldg 201 Room E157	NAD	----	100%OTHR
0795-097	E098 Brown Cove Mastic	NAD	----	100%TARA
0795-098	E099 Drywall Bldg 201 Rm E157	NAD	10-20%CELL 05-10%OTHR	60-70%OTHR
0795-099	E101 12"x12" Acoustical Tile Bldg 201 Rm E169	NAD	80-85%FBGL	10-15%OTHR
0795-100	E102 Brown Mastic Bldg 201 Rm E169	NAD	----	100%TARA
0795-101	E103 12"x12" Acoustical Tile Bldg 201 Rm E169	NAD	80-90%CELL	01-10%OTHR
0795-102	E104 12"x12" Floor Tile Bldg 201 Room E169	NAD	01-05%CELL	90-95%TICO
0795-103	E105 Wall Plaster Bldg 201 Rm E166	NAD	05-10%CELL	80-90%OTHR
0795-104	E106 Particle Board Mastic Rm E168	NAD	----	100%TARA
0795-105	E107 Duct Binding Material Rm E166	05-15%CHRY	05-10%OTHR	65-75%OTHR
0795-106	E108 Drywall Rm. E166	NAD	10-20%CELL 05-10%OTHR	60-70%OTHR
0795-107	E109 Plaster Wall Rm. E166	NAD	05-10%CELL	80-90%OTHR
0795-108	E110 Drywall S. Wing Hall	NAD	05-10%SYNC 10-20%CELL	60-70%OTHR
0795-109	E111 2x4 Ceiling Tile W. Wing Hall	NAD	20-30%FBGL 20-30%CELL	30-40%OTHR
0795-110	E112 Drywall Rm. W148	NAD	10-20%CELL 05-10%OTHR	60-70%OTHR
0795-111	E113 2x4 Ceiling Tile Rm W151	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-112	E114 4" Brown Cove Molding Rm W140	NAD	----	100%TARA
0795-113	E115 2x4 Ceiling Tile Main Entrance	NAD	20-30%CELL 20-30%FBGL	30-40%OTHR
0795-114	F116 4" Black Cove Molding Bldg 202 Room 121	NAD	----	100%OTHR
0795-115	F117 Cove Molding Mastic	NAD	----	100%TARA
0795-116	F118 Gray Fibrous Material Above 118 Bldg 202	NAD	05-10%OTHR 60-70%MWOL	10-20%OTHR
0795-117	F119 Drywall Rm. 115	NAD	01-10%OTHR 10-20%CELL	60-70%OTHR
0795-118	F121 12"x 12" Acoustical Tile Room 103C Bldg 202	NAD	70-80%FBGL	10-20%OTHR
0795-119	F122 Ceiling Drywall Rm 101	NAD	10-20%CELL 05-10%OTHR	60-70%OTHR
0795-120	F123 12"x 12" Floor Tile Rm 101	05-10%CHRY	----	80-90%TICO
	F123 Mastic	01-05%CHRY	01-05%OTHR	80-90%TARA
0795-121	F124 Drywall Ceil Board Rm 103C	NAD	05-10%OTHR 10-20%CELL	60-70%OTHR
0795-122	F125 4" Black Cove Molding Rm 114	NAD	----	100%OTHR
0795-123	F126 Cove Molding Mastic Rm 114	NAD	----	100%TARA
0795-124	F127 Drywall Rm 120	NAD	10-20%CELL 05-10%OTHR	60-70%OTHR
0795-125	G128 12"x 12" Floor Tile Bldg 210	NAD	----	100%TICO
0795-126	G129 Floor Tile Mastic Bldg 210	NAD	----	100%TARA
0795-127	H130 Concrete Floor Bldg 204	NAD	----	100%OTHR

ESTIMATED PERCENT COMPOSITION OF MATERIAL

LAB NO.	DESCRIPTION	%ASBESTOS	%OTHER FIBERS	%NON-FIBERS
0795-128	H131 Concrete Ceiling Bldg 204	NAD	----	100%OTHR
0795-129	I132 12"x 12" Floor Tile, 1st Floor Bthrm Bldg 306	NAD	----	100%TICO
0795-130	I133 Floor Tile Mastic/Bthrm Bldg 306	NAD	05-10%CELL	80-90%TARA
0795-131	I134 Stair Tread Between 1st/2nd Floor Bldg 306	NAD	----	100%OTHR
0795-132	I135 Stair Tread Mastic Bldg 306	NAD	----	100%TARA
0795-133	I136 4" Brown Cove Molding/Maint. Bay Bldg 306	NAD	----	100%OTHR
0795-134	I137 Brown Mastic Maint. Bay Bldg 306	NAD	----	100%TARA
0795-135	I138 Drywall 2nd Floor Bldg 306	NAD	10-20%CELL 10-20%SYNC	50-60%OTHR
0795-136	I139 Drywall Stairway Bldg 306	NAD	10-20%CELL 05-10%SYNC	60-70%OTHR
0795-137	X141 Old Chimney Culvert	NAD	----	100%OTHR
0795-138	X142 TSI Exterior Bldg 203 Southside	NAD	05-10%CELL 20-30%SYNC	50-60%OTHR

ASBESTOS TYPE

NAD=No Asbestos Det.
 CHRY=Chrysotile Asb.
 CROC=Crocidolite Asb.
 AMOS=Amosite Asbestos
 TREM=Tremolite Asb.
 ACTI=Actinolite Asb.
 ATHO=Anthophyllite Asb.

OTHER FIBERS

CELL=Cellulose
 FBGL=Fiberglass
 MWOL=Mineral wool
 POLY=Polyester
 SYNT=Synthetic
 OTHR=Other
 NONE=None

NON-FIBER TYPES

CACO=Calcium Carbonate
 CASO=Calcium Sulfate
 MICA=Mica
 TICO=Tile components
 TARA=Tar/Adhesive
 OTHR=Other
 NONE=None

A representative of this Company has conducted an evaluation including sample preparation and analysis to determine the presence, type and amount of asbestos in the samples collected and submitted by the client. This evaluation relates only to the samples tested and did not include verification of data supplied by the client as to sample source. This Company shall not be liable for any use of this report beyond the scope of the above limitation.

Yours very truly,


Oneil M. Banks

Checklist Results Tabulation

Woodbridge Research Facility USAEC Checklist Summary					Part I Damage Assessment	Physical	Water	Prox to repair		Type ACM	Percent Asbestos	Damage Index	Part II Exposure Assessment	Mat Friability	Accessibility	Activity/ Use	Air Stream	Visible Damage	Occupancy	Unoccupied Fac.	Exposure Index	Assessment Index
Sample	Number	Building	Room	Description				A.Spray/Trowel	B.Pipe/duct insul													
A 001	102	NA		Painted Drywall and Joint Compound	0	0	0	0	0	0	0		0	4	2	1	0	1		8	F	
A 002	102	NA		Tan Countertop Mastic	0	0	0	0	0	0	0		0	4	2	1	0	1		8	F	
B 003	101	102		12"x12" Floor Tile (Gray with White and Gray Mottling)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
B 004	101	102		12"x12" Floor Tile Mastic (Gray with White and Gray Mottling)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
B 005	101	NA		12"x12" Floor Tile (Gray with White and Gray Mottling)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
B 006	101	NA		Black Mastic from 12"x12" Floor Tile (Gray with White and Gray Mottling)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
B 007	101	102		Drywall and Joint	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
B 008	101	103		2'x4' Ceiling Tile (Marble Pattern w/Pinholes)	0	1	0	0	0	0	1		0	4	3	1	0	2		10	E	
B 009	101	NA		2'x4' Ceiling Tile (Marble Pattern w/Pinholes)	0	1	0	0	0	0	1		0	4	3	1	0	2		10	E	
B 010	101	NA		6" Black Cove Molding	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
B 011	101	NA		Black Mastic from 6" Black Cove Molding	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
B 012	101	105		Duct Gasketing Material	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
C 013	211	315		2'x4' Ceiling Tile (Wormy Pattern w/Large Pinholes)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
C 014	211	Hall		2'x4' Ceiling Tile (Wormy Pattern w/Small Pinholes)	0	1	0	0	0	0	1		0	4	3	1	0	2		10	E	
C 015	211	307		Drywall and Joint	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
C 016	211	307		White Duct Glue	0	0	0	0	1	0	1		0	0	1	2	0	2		5	F	
C 017	211	310		Troweled Window Material	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
C 018	211	307		4" High Brown Cove Molding	0	0	0	0	0	0	0		0	4	3	1	0	1		9	F	
C 019	211	307		Black Mastic from 4" High Brown Cove Molding	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
C 020				Duplicate of C021							0									0	F	
C 021	211	Hall		2'x4' Ceiling Tile (Random Mottled Pattern w/Small Pinholes)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
C 022	211	310		12"x12" Floor Tile (Light Tan w/Brown Mottling)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
C 023	211	310		Brown Mastic from 12"x12" Floor Tile (Light Tan w/Brown Mottling)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
C 024	211	113		12"x12" Floor Tile (Beige w/Brown and White	0	0	0	0	0	0	0		0	4	3	0	0	2		9	F	
C 025	211	112		Drywall and Joint	0	0	0	0	0	0	0		0	4	3	0	0	2		9	F	
C 026	211	113		Fire Door Insulation	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
C 027	211	103		Brown Mastic from Wall	0	0	0	0	0	0	0		0	4	1	1	0	1		7	F	
C 028	211	103		3'x3' Floor Tile	0	0	0	0	0	0	0		0	4	1	1	0	1		7	F	
C 029	211	Mech. Room		Duct Gasketing Material	0	0	0	0	0	0	0		0	1	1	1	0	1		4	F	

Checklist Results Tabulation

Woodbridge Research Facility USAEC Checklist Summary					Part I Damage Assess							Part II Exposure Assess							Exposure Index		Assessment Index			
Sample	Number	Building	Room	Description		Physical	Water	Prox to repair		Type ACM	Percent Asbestos	Damage Index		Mat Friability	Accessibility	Activity/ Use	Air Stream	Visible Damage	Occupancy	Unoccupied Fac.				
								A.Spray/Trowel	B.Pipe/duct insul															
C	030	211	Mech. Room	Troweled Material on Ceiling		0	0	0	0	0	0	0		0	1	1	1	0	1			4	F	
C	031	211	Mech. Room	Boiler Jacket Insulation		0	0	0	3	0	0	3		0	1	1	1	0	1			4	F	
D	032	203	Main Ent.	12"x12" Floor Tile (Tan w/Orange, Brown, and White Mottling)		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	033	203	Maint.	Black Mastic from 12"x12" Floor Tile (Tan w/Orange, Brown, and White Mottling)		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	034	203	Main Ent.	Staircase Tread		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	035	203	Main Ent.	Mastic from Staircase Tred		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	036	203	117	Tan Plaster Base Material		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	037	203	117	White Drywall Material Over Tan Plaster		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	038	203	124	Brown Mastic from 12"x16" Acoustical Tile (3/8" Dot Pattern)		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	039	203	124	12"x16" Acoustical Tile (3/8" Dot Pattern)		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	040			Duplicate of D041								0										0	F	
D	041	203	124	2' x 2' Floor Tile		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	042	203	Main Ent.	6" Black Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	043	203	Main Ent.	Tan Mastic from 6" Black Cove Molding (Outer Layer)		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	044	203	Main Ent.	Black Mastic from 6" Black Cove Molding (Inner Layer)		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	045	203	108	Tan Plaster Base Material		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	046	203	108	White Drywall Material Over Tan Plaster		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	047	203	108	Drywall and Joint		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	048	203	102	Tan Duct Glue		0	0	0	0	0	0	0		0	0	1	1	0	2			4	F	
D	049	203	102	White Duct Glue		0	0	0	0	1	0	1		0	0	1	2	0	2			5	F	
D	050	203	102	Brown Mastic		0	0	0	0	0	0	0		0	0	3	1	0	2			6	F	
D	051	203	102	2'x4' Ceiling Tile (Mottled Pattern w/Small Pinholes)		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	052	203	125	4" Black Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	053	203	125	Brown Mastic from 4" Black Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	054	203	124	4" Brown Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	055	203	124	Brown Mastic from 4" Brown Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	056	203	225	Drywall and Joint		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	057	203	225	Plaster		0	0	0	0	0	0	0		0	0	3	1	0	2			6	F	
D	058	203	225	Black Duct Glue		0	0	0	0	1	0	1		0	0	3	2	0	2			7	F	
D	059	203	224	6" Black Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2			10	F	
D	060			Duplicate of D061								0										0	F	

Checklist Results Tabulation

Woodbridge Research Facility USAEC Checklist Summary					Part I Damage Assess	Physical	Water	Prox to repair		Type ACM	Percent Asbestos	Damage Index	Part II Exposure Assess	Mat Friability	Accessibility	Activity/ Use	Air Stream	Visible Damage	Occupancy	Unoccupied Fac.	Exposure Index	Assessment Index
Sample	Number	Building	Room	Description				A.Spray/Trowel	B.Pipe/duct insul													
D 061	203	224		Brown Mastic from 6" Black Cove Molding	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 062	203	219		Brown Mastic from Corkboard	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 063	203	2nd Floor Hall		2'x4' Ceiling Tile (Mottled Pattern w/Pinholes)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 064	203	2nd Floor Hall		2'x4' Ceiling Tile (Marbled Pattern w/Pinholes)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 065	203	2nd Floor Hall		2'x4' Ceiling Tile (Wormy Pattern w/Pinholes)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 066	203	210		Beige, Painted (2 coats) Drywall and Joint	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 067	203	205		Drywall and Joint	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 068	203	210		2'x4' Ceiling Tile (Mottled Pattern w/Pinholes)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 069	203	202		Tan Pressboard	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 070	201	N106		2'x4' Ceiling Tile (Mottled Pattern w/Pinholes)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 071	201	N106		2'x4' Ceiling Tile (Marbled Pattern w/Pinholes)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 072	201	N106		Drywall and Joint	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 073	201	N106		Debris in Steamline Chase	0	0	0	0	0	0	0		0	0	1	1	0	2		4	F	
E 074	201	Lobby		12"x12" Floor Tile (Beige w/White and Gray Mottling)	0	0	0	0	1	0	1		0	4	3	2	0	2		11	E	
E 075	201	Hall		2'x4' Ceiling Tile (Pocked w/Small and Large Pinholes)	0	1	0	0	0	0	1		0	4	3	1	0	2		10	E	
E 076	201	Hall		Brown Mastic	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 077	201	N101A		4'x8' Primary Ceiling	0	0	0	0	0	0	0		0	0	1	1	0	2		4	F	
E 078	201	N101A		Tan Plaster Wall Material	0	0	0	0	0	0	0		3	4	3	1	0	2		13	F	
E 079	201	N101		Drywall Plaster Compound	0	0	0	0	0	0	0		3	4	3	1	0	2		13	F	
E 080				Duplicate of E081							0									0	F	
E 081	201	N101A		White Thermal System Pipe Sealant	0	0	0	0	0	0	0		0	1	1	1	0	1		4	F	
E 082	201	N107A		12"x12" Acoustical Tile (1/2" Dot Pattern)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 083	201	N107A		Brown Mastic from 12"x12" Acoustical Tile (1/2" Dot Pattern)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 084	201	N107A		2'x4' Ceiling Tile (Straight Wormy Pattern w/Small and Large Pinholes)	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 085	201	N107B		2'x4' Ceiling Tile (Marbled w/Many Pinholes)	0	1	0	0	0	0	1		0	4	3	1	0	2		10	E	
E 086	201	N107C		2'x4' Ceiling Tile (Bone Colored, Marbled, w/Pinholes)	0	1	0	0	0	0	1		0	4	3	1	0	2		10	E	
E 087	201	N107		4" Black Cove Molding	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	

Checklist Results Tabulation

Woodbridge Research Facility USAEC Checklist Summary					Part I Damage Assess										Part II Exposure Assess										Exposure Index	Assessment Index
Sample	Number	Building	Room	Description	Physical	Water	Prox to repair		Type	Percent	Damage Index	Mat Friability	Accessibility	Activity/ Use	Air Stream	Visible Damage	Occupancy	Unoccupied Fac.								
E 088	201	N107		Brown Mastic from 4" Black Cove Molding	0	0	A.Spray/Trowel	B.Pipe/duct insul	0	0	0	0	4	3	1	0	2		10	F						
E 089	201	N109		6" Black Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 090	201	N109		Brown Mastic from 6" Black Cove Molding	0	0	0	0	0	0	0	3	4	3	1	0	2		13	F						
E 091	201	N111		Plaster Wall	0	0	0	0	0	0	0	0	1	2	1	0	1		5	F						
E 092	201	N101		Electrical Chase Debris	0	0	0	0	0	0	0	0	0	0	1	0	1		2	F						
E 093	201	N116		Drywall and Joint	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 094	201	N118		Brown Mastic Above Ceiling	0	0	0	0	0	0	0	0	0	1	1	0	2		4	F						
E 095	201	N118		12"x12" Floor Tile (Beige w/Brown and White	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 096	201	W154		Drywall and Joint	0	0	0	0	0	0	0	0	4	3	1	0	3		11	F						
E 097	201	E157		4" Brown Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 098	201	E157		Mastic from 4" Brown Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 099	201	E157		Drywall and Joint	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 100				Duplicate of E101							0								0	F						
E 101	201	E169		12"x12" White Acoustical Tile (1" Dot Spacing)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 102	201	E169		Brown Mastic from 12"x12" White Acoustical Tile (1" Dot Spacing)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 103	201	E166		12"x12" White Acoustical Tile (1/2" spacing)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 104	201	E166		12"x12" Floor Tile (Beige w/White and Gray Mottling)	0	1	0	0	0	0	1	0	4	3	1	0	2		10	E						
E 105	201	E166		Wall Plaster	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 106	201	E168		Particle Board Tan Mastic	0	0	0	0	0	0	0	0	4	3	1	0	1		9	F						
E 107	201	E166		White Duct Glue	0	0	0	0	1	0	1	0	4	3	2	0	2		11	E						
E 108	201	E166		Drywall and Joint	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 109	201	E166		Green Painted Wall Plaster	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 110	201	Hall (S120)		Drywall and Joint Compound	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 111	201	Hall (W148)		2'x4' Ceiling Tile (Mottled w/Pinholes)	0	1	0	0	0	0	1	0	4	3	1	0	2		10	E						
E 112	201	W148		Painted Drywall and Joint Compound	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 113	201	W151		2'x4' Ceiling Tile (Pocked w/Small and Large Pinholes)	0	1	0	0	0	0	1	0	4	3	1	0	2		10	E						
E 114	201	W140		4" Brown Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
E 115	201	Maint.		2'x4' Ceiling Tile (Wormy w/Large Pinholes and Woven Texture)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
F 116	202	121		4" Black Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
F 117	202	121		Brown Mastic from 4" Black Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						
F 118	202	117		Gray, Fibrous Debris	0	0	0	0	0	0	0	0	1	1	1	0	1		4	F						
F 119	202	115		Painted Drywall and Joint Compound	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F						

Checklist Results Tabulation

Woodbridge Research Facility USAEC Checklist Summary					Part I Damage Assess	Physical	Water	Prox to repair		Percent Asbestos	Damage Index	Part II Exposure Assess	Mat Friability	Accessibility	Activity/ Use	Air Stream	Visible Damage	Occupancy	Unoccupied Fac.	Exposure Index	Assessment Index	
Sample	Number	Building	Room	Description				A.Spray/Trowel	B.Pipe/duct insul													Type ACM
F 120				Duplicate of F121						0										0	F	
F 121	202	103C		12"x12" White Acoustical Tile w/Small Pinholes		0	0	0	0	0	0		0	4	3	1	0	1		9	F	
F 122	202	101		Drywall and Joint		0	0	0	0	0	0		0	4	2	1	0	1		8	F	
F 123	202	101		12"x12" Floor Tile (Green and Gray w/White Streaks)		0	0	0	0	1	0	1	0	4	2	2	0	1		9	E	
F 123A	202	101		Black Mastic from 12"x12" Floor Tile (Green and Gray w/White Streaks)		0	0	0	0	1	0	1	0	4	2	2	0	1		9	E	
F 124	202	103C		Ceiling Material		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
F 125	202	114		4" Black Cove Molding		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
F 126	202	114		Brown Mastic from 4" Black Cove Molding		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
F 127	202	120		Drywall		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
G 128	210	NA		12"x12" Floor Tile (Beige w/Black & White Mottling)		0	0	0	0	0	0	0	0	4	1	1	0	1		7	F	
G 129	210	NA		Tan Mastic from 12"x12" Floor Tile (Beige w/Black & White Mottling)		0	0	0	0	0	0	0	0	4	1	1	0	1		7	F	
H 130	204	NA		Concrete Floor		0	0	0	0	0	0	0	0	4	0	1	0	1		6	F	
H 131	204	NA		Concrete Ceiling		0	0	0	0	0	0	0	0	4	0	1	0	1		6	F	
I 132	306	NA		12"x12" Floor Tile (Rust Color w/Brown and Cream Mottling)		0	0	0	0	0	0	0	0	4	2	1	0	2		9	F	
I 133	306	NA		Mastic from 12"x12" Floor Tile (Rust Color w/Brown and Cream Mottling)		0	0	0	0	0	0	0	0	4	2	1	0	2		9	F	
I 134	306	NA		Brown Stair Tread		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
I 135	306	NA		Brown Mastic from Brown Stair Tread		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
I 136	306	NA		4" Brown Cove Molding		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
I 137	306	NA		Mastic from 4" Brown Cove Molding		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
I 138	306	NA		Painted Drywall and Joint Compound		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
I 139	306	NA		Painted Drywall		0	0	0	0	0	0	0	0	4	3	1	0	2		10	F	
X 140				Duplicate of X-141							0									0	F	
X 141	NA	NA		Culvert/Old Chimney		0	0	0	0	0	0	0	0	1	1	1	0	1		4	F	
X 142	203	NA		Thermal Insulation at South End Exterior		0	0	0	0	0	0	0	0	4	1	1	0	1		7	F	
		101 201 202		General Assessment of All 9"x9" Floor Tile Assumed To Be ACM per the Scope of Work																	E	
NA	NA	203	NA			0	0	0	0	1	0	1	0	4	3	2	0	2		11		
NA	NA	203	108	9"x9" Floor Tile		0	2	0	0	1	0	3	0	4	3	2	1	2		12	E	

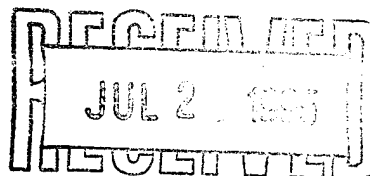


LAW

ENGINEERING AND ENVIRONMENTAL SERVICES

July 24, 1995

Mr. Bryant Bullock
Horne Engineering Services, Inc.
4401 Ford Avenue
Suite 1100
Alexandria, VA 22302



Subject: **Bulk Sample Analysis**
Woodbridge Research Facility
LAW Project 20340-5-0639

Dear Mr. Bullock:

Law Engineering and Environmental Services, Inc. (LAW) has completed the analysis of the building material samples submitted on July 11, 1995. Attached are the Chain of Custody, Summary of Sample Analysis, and the Bulk Sample Analysis Sheets.

The samples were analyzed using Polarized Light Microscopy (PLM) coupled with dispersion staining techniques as outlined in The Environmental Protection Agency's "Interim Method for Determination of Asbestos in Material Insulation Samples" (EPA-600/M4-82-020, December 1982), with the following exceptions: High dispersion refractive index oils were used when appropriate and quantification of components was performed by visual estimate.

LAW appreciates this opportunity to serve Horne Engineering Services, Inc.. If you have any questions concerning this report, please do not hesitate to contact us.

Sincerely,

LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

Ronald M. Combs
Laboratory Manager, Facilities Environmental Services

Paul J. Bruner, Jr., P.E.
Principal Engineer

RMC/PJB:alm

LAW ENGINEERING, INC.

4465 BROOKFIELD CORPORATE DRIVE • CHANTILLY, VA 22021
(703) 968-4700 • FAX (703) 968-4778

ONE OF THE LAW COMPANIES

CHAIN OF CUSTODY
LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.
 4465 BROOKFIELD CORPORATE DRIVE
 CHANTILLY, VIRGINIA 22021

PROJECT: WOODBRIDGE RESEARCH FACILITY LAW PROJECT NUMBER: 20340-5-0639

CLIENT: HORNE ENGINEERING SERVICES, INC.

DATE: JULY 5, 1995

INSPECTOR: B. BULLOCK

FIELD SAMPLE NUMBER	SAMPLE TYPE	SAMPLE LOCATION	LAB SAMPLE NUMBER
CO20	2'X4' CEILING TILE	BUILDING 211, 3RD FLOOR HALL	WA 23961
DO40	2'X2' FLOOR TILE	BUILDING 203, ROOM 124	WA 23962
DO60	BROWN MASTIC	BUILDING 203, ROOM 224	WA 23963
EO80	THERMAL SYSTEM PIPE SEALANT	BUILDING 201, ROOM N101A	WA 23964
E100	12"X12" ACOUSTICAL TILE	BUILDING 201, ROOM E169	WA 23965
F120	12"X12" ACOUSTICAL TILE	BUILDING 202, ROOM 103C	WA 23966
X140	CULVERT/OLD CHIMNEY LINER	NA	WA 23967
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FIELD COLLECTION	1ST TRANSFER	2ND TRANSFER
INSPECTOR: B. BULLOCK	FACILITY: LAW ENGINEERING ASBESTOS LABORATORY	FACILITY:
SIGNATURE:	NAME: RONALD M. COMBS	NAME:
DATE: JULY 5, 1995	SIGNATURE: <i>R. M. Combs</i>	SIGNATURE:

TABLE 1

ASBESTOS BULK SAMPLE ANALYSIS

FOR

WOODBIDGE RESEARCH FACILITY

LAW PROJECT NUMBER: 20340-5-0639

FIELD SAMPLE NUMBER	LAB SAMPLE NUMBER	SAMPLE TYPE/COLOR	LOCATION	RESULTS OF PLM ANALYSIS
CO20	WA 23961	2'X4' CEILING TILE	BUILDING 211, 3RD FLOOR HALL	NONE DETECTED
DO40	WA 23962	2'X2' FLOOR TILE	BUILDING 203, ROOM 124	NONE DETECTED
DO60	WA 23963	BROWN MASTIC	BUILDING 203, ROOM 224	NONE DETECTED
EO80	WA 23964	THERMAL SYSTEM PIPE SEALANT	BUILDING 201, ROOM N101A	NONE DETECTED
E100	WA 23965	12"X12" ACOUSTICAL TILE	BUILDING 201, ROOM E169	NONE DETECTED
F120	WA 23966	12"X12" ACOUSTICAL TILE	BUILDING 202, ROOM 103C	NONE DETECTED
X140	WA 23967	CULVERT/OLD CHIMNEY LINER	NA	NONE DETECTED
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* Materials containing asbestiform minerals - The percent of various material components was estimated visually by the microscopist during the analysis. Polarized Light Microscopy (PLM) coupled with dispersion staining was the method of identification used.

Floor tile and other resinously bound materials, when analyzed by the EPA method, may yield false negative results because of limitations in separating closely bound fibers and in detecting fibers of small length and diameter. When a definitive result is required, LAW recommends utilizing alternative methods of identification, including Transmission Electron Microscopy.

The results of these analyses should not be used as a scope of work for abatement without consulting LAW.

VA. LAB LICENSE #: 3333000010 NVLAP #: 1847

BULK SAMPLE ANALYSIS **LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.**

4465 BROOKFIELD CORPORATE DRIVE
 CHANTILLY, VIRGINIA 22021
 VA. LAB LICENSE #: 3333000010
 NVLAP #: 1847

PROJECT: WOODBRIDGE RESEARCH FACILITY DATE OF ANALYSIS: JULY 12, 1995
 LAW PROJECT NUMBER: 20340 - 5 - 0639 SAMPLE LOCATION: BUILDING 203, ROOM 124
 CLIENT: HORNE ENGINEERING SERVICES, INC. SAMPLE TYPE: 2'X2' FLOOR TILE
 LAB SAMPLE NUMBER: WA 23962 TEXTURE:
 FIELD SAMPLE NUMBER: DO40 COLOR:

ASBESTOS		OPTICAL DATA FOR ASBESTOS IN SAMPLE		#1	#2
CHRYSOPILE	%	ASBESTOS TYPE			
AMOSITE	0 %	ESTIMATED PERCENTAGE			
CROCIDOLITE	0 %	(PERCENTAGE IS VISUALLY ESTIMATED)			
ANTHOPHYLLITE	0 %	PLEOCHROISM	YES	NO	
TREMOLITE/ACTINOLITE	0 %	IF YES, COLOR?	BLUE	GRAY	YELLOW
OTHER FIBERS					
SYNTHETIC FIBERS	%	BIREFRINGENCE	HIGH		
GLASS FIBERS	%		MEDIUM		
MINERAL WOOL	%		LOW		
CELLULOSE	65 %				

NON - FIBROUS COMPONENTS			
BINDERS	35 %	REFRACTIVE INDICES:	PARALLEL
PAINT/COATING	%		PERPENDICULAR
AGGREGATE COARSE OR FINE	%	SIGN OF ELONGATION	POSITIVE
VINYL	%		NEGATIVE
MASTIC	%	EXTINCTION	PARALLEL
PERLITE	%		OBLIQUE
FOAM	%	MORPHOLOGY	
TOTAL	100 %		
MICROSCOPIST:		DATE	
RONALD M. COMBS		JULY 12, 1995	
INSPECTOR:		DATE	
B. BULLOCK		JULY 5, 1995	
ANALYSTS COMMENTS:		DISPERSION COLORS	
		YELLOW/YELLOW	
		MAGENTA/BLUE	
		YELLOW/BLUE	
		GOLD/BLUE	
		LONG FIBEROUS WAVY	
		LONG FIBEROUS STRAIGHT	
		SHORT FIBEROUS STRAIGHT	

BULK SAMPLE ANALYSIS

LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

4465 BROOKFIELD CORPORATE DRIVE
CHANTILLY, VIRGINIA 22021
VA. LAB LICENSE #: 3333000010
NVLAP #: 1847

PROJECT: WOODBRIDGE RESEARCH FACILITY DATE OF ANALYSIS: JULY 12, 1995

LAW PROJECT NUMBER: 20340-5-0639 SAMPLE LOCATION: BUILDING 203, ROOM 224

CLIENT: HORNE ENGINEERING SERVICES, INC. SAMPLE TYPE: BROWN MASTIC

LAB SAMPLE NUMBER: WA 23963 TEXTURE:

FIELD SAMPLE NUMBER: DO60 COLOR:

OPTICAL DATA FOR ASBESTOS IN SAMPLE				
ASBESTOS	%	ASBESTOS TYPE	#1	#2
CHRYSO TILE	0 %			
AMOSITE	0 %	ESTIMATED PERCENTAGE		
CROCIDOLITE	0 %	(PERCENTAGE IS VISUALLY ESTIMATED)		
ANTHOPHYLLITE	0 %	PLEOCHROISM	YES	NO
TREMOLITE/ACTINOLITE	0 %	IF YES, COLOR?	BLUE	GRAY
			YELLOW	

OTHER FIBERS

SYNTHETIC FIBERS	%	BIREFRINGENCE	HIGH
GLASS FIBERS	%		MEDIUM
MINERAL WOOL	%		LOW
CELLULOSE	2 %		

NON - FIBROUS COMPONENTS

BINDERS	93 %	REFRACTIVE INDICES:	PARALLEL
PAINT/COATING	%		PERPENDICULAR
AGGREGATE COARSE OR FINE	5 %	SIGN OF ELONGATION	POSITIVE
VINYL	%		NEGATIVE
MASTIC	%	EXTINCTION	PARALLEL
PERLITE	%		OBLIQUE
FOAM	%	MORPHOLOGY	
TOTAL	100 %		

MICROSCOPIST: DATE

RONALD M. COMBS JULY 12, 1995

INSPECTOR: DATE

B. BULLOCK JULY 5, 1995

ANALYSTS COMMENTS:

DISPERSION COLORS

YELLOW/YELLOW
MAGENTA/BLUE
YELLOW/BLUE
GOLD/BLUE

LONG FIBEROUS WAVY
LONG FIBEROUS STRAIGHT
SHORT FIBEROUS STRAIGHT

BULK SAMPLE ANALYSIS

LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

4665 BROOKFIELD CORPORATE DRIVE
CHANTILLY, VIRGINIA 22021
VA. LAB LICENSE #: 3333000010
NVLAP #: 1847

PROJECT: WOODBRIDGE RESEARCH FACILITY	DATE OF ANALYSIS: JULY 12, 1995	
LAW PROJECT NUMBER: 20340-5-0639	SAMPLE LOCATION: BUILDING 201, ROOM N101A	
CLIENT: HORNE ENGINEERING SERVICES, INC.	SAMPLE TYPE: THERMAL SYSTEM PIPE SEALANT	
LAB SAMPLE NUMBER: WA 23964	TEXTURE:	
FIELD SAMPLE NUMBER: EO80	COLOR:	

OPTICAL DATA FOR ASBESTOS IN SAMPLE					#1	#2
ASBESTOS	%	ASBESTOS TYPE	ESTIMATED PERCENTAGE (PERCENTAGE IS VISUALLY ESTIMATED)	PLEOCHROISM	IF YES, COLOR?	
CHRYSOTILE	0 %					
AMOSITE	0 %					
CROCIDOLITE	0 %					
ANTHOPHYLLITE	0 %					
TREMOLITE/ACTINOLITE	0 %					
OTHER FIBERS						
SYNTHETIC FIBERS	%	BIREFRINGENCE	HIGH	YES	NO	
GLASS FIBERS	%		MEDIUM	BLUE	GRAY	
MINERAL WOOL	40 %		LOW			
CELLULOSE	2 %					

NON - FIBROUS COMPONENTS				
BINDERS	20 %	REFRACTIVE INDICES:	PARALLEL	
PAINT/COATING	%		PERPENDICULAR	
AGGREGATE COARSE OR FINE	38 %	SIGN OF ELONGATION	POSITIVE	
VINYL	%		NEGATIVE	
MASTIC	%	EXTINCTION	PARALLEL	
PERLITE	%		OBLIQUE	
FOAM	%	MORPHOLOGY		
TOTAL	100 %			

MICROSCOPIST:	DATE	
RONALD M. COMBS	JULY 12, 1995	
INSPECTOR:	DATE	
B. BULLOCK	JULY 5, 1995	
ANALYSTS COMMENTS:		

DISPERSION COLORS	YELLOW/YELLOW MAGENTA/BLUE YELLOW/BLUE GOLD/BLUE
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BULK SAMPLE ANALYSIS
LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.
 4465 BROOKFIELD CORPORATE DRIVE
 CHANTILLY, VIRGINIA 22021
 VA. LAB LICENSE #: 3333000010
 NVLAP #: 1847

PROJECT: WOODBRIDGE RESEARCH FACILITY DATE OF ANALYSIS: JULY 12, 1995

LAW PROJECT NUMBER: 20340-5-0639 SAMPLE LOCATION: BUILDING 201, ROOM E169

CLIENT: HORNE ENGINEERING SERVICES, INC. SAMPLE TYPE: 12"x12" ACOUSTICAL TILE

LAB SAMPLE NUMBER: WA 23965 TEXTURE:

FIELD SAMPLE NUMBER: E100 COLOR:

OPTICAL DATA FOR ASBESTOS IN SAMPLE					#1	#2
ASBESTOS	%	ASBESTOS TYPE	ESTIMATED PERCENTAGE	(PERCENTAGE IS VISUALLY ESTIMATED)		
CHRYSOCTILE	0 %					
AMOSITE	0 %					
CROCIDOLITE	0 %					
ANTHOPHYLLITE	0 %					
TREMOLITE/ACTINOLITE	0 %					

OTHER FIBERS						
	%	BIREFRINGENCE	HIGH	MEDIUM	LOW	
SYNTHETIC FIBERS						
GLASS FIBERS						
MINERAL WOOL	88 %					
CELLULOSE						

NON - FIBROUS COMPONENTS						
	%	REFRACTIVE INDICES:	PARALLEL	PERPENDICULAR		
BINDERS	10 %					
PAINT/COATING	2 %					
AGGREGATE COARSE OR FINE						
VINYL						
MASTIC						
PERLITE						
FOAM						
TOTAL	100 %					

MICROSCOPIST:						
	DATE					
RONALD M. COMBS	JULY 12, 1995					
INSPECTOR:	DATE					
B. BULLOCK	JULY 5, 1995					

ANALYSTS COMMENTS:						

BULK SAMPLE ANALYSIS

LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

4465 BROOKFIELD CORPORATE DRIVE
CHANTILLY, VIRGINIA 22021
VA. LAB LICENSE #: 3333000010
NVLAP #: 1847

PROJECT: WOODBRIDGE RESEARCH FACILITY	DATE OF ANALYSIS: JULY 12, 1995	
LAW PROJECT NUMBER: 20340-5-0639	SAMPLE LOCATION: BUILDING 202, ROOM 103C	
CLIENT: HORNE ENGINEERING SERVICES, INC.	SAMPLE TYPE: 12"X12" ACOUSTICAL TILE	
LAB SAMPLE NUMBER: WA 23966	TEXTURE:	
FIELD SAMPLE NUMBER: F120	COLOR:	

ASBESTOS OPTICAL DATA FOR ASBESTOS IN SAMPLE

ASBESTOS	%	ASBESTOS TYPE	#1	#2
CHRYSOPILE	0 %	ESTIMATED PERCENTAGE		
AMOSITE	0 %	(PERCENTAGE IS VISUALLY ESTIMATED)		
CROCIDOLITE	0 %			
ANTHOPHYLLITE	0 %	PLEOCHROISM	YES	NO
TREMOLITE/ACTINOLITE	0 %	IF YES, COLOR?	BLUE	GRAY
			YELLOW	

OTHER FIBERS

SYNTHETIC FIBERS	%	BIREFRINGENCE	HIGH	
GLASS FIBERS	%		MEDIUM	
MINERAL WOOL	90 %		LOW	
CELLULOSE	%			

NON - FIBROUS COMPONENTS

NON - FIBROUS COMPONENTS	10 %	REFRACTIVE INDICES:	PARALLEL	PERPENDICULAR
BINDERS				
PAIN/COATING	TRACE			
AGGREGATE COARSE OR FINE		SIGN OF ELONGATION	POSITIVE	
VINYL			NEGATIVE	
MASTIC		EXTINCTION	PARALLEL	
PERLITE			OBLIQUE	
FOAM		MORPHOLOGY		
TOTAL	100 %			

MICROSCOPIST: DATE

RONALD M. COMBS JULY 12, 1995

INSPECTOR: DATE

B. BULLOCK JULY 5, 1995

ANALYSTS COMMENTS:

DISPERSION COLORS
YELLOW/YELLOW
MAGENTA/BLUE
YELLOW/BLUE
GOLD/BLUE

BULK SAMPLE ANALYSIS
LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.
465 BROOKFIELD CORPORATE DRIVE
CHANTILLY, VIRGINIA 22021
VA. LAB LICENSE #: 3333000010
NVLAP #: 1847

PROJECT: WOODBRIDGE RESEARCH FACILITY DATE OF ANALYSIS: JULY 12, 1995
LAW PROJECT NUMBER: 20340-5-0639 SAMPLE LOCATION: NA
CLIENT: HORNE ENGINEERING SERVICES, INC. SAMPLE TYPE: CULVERT/OLD CHIMNEY LINER
LAB SAMPLE NUMBER: WA 23967 TEXTURE:
FIELD SAMPLE NUMBER: X140 COLOR:

ASBESTOS % OPTICAL DATA FOR ASBESTOS IN SAMPLE #1 #2

CHRYSOPILE	0 %	ASBESTOS TYPE		
AMOSITE	0 %	ESTIMATED PERCENTAGE		
CROCIDOLITE	0 %	(PERCENTAGE IS VISUALLY ESTIMATED)		
ANTHOPHYLLITE	0 %	PLEOCHROISM	YES	NO
TREMOLITE/ACTINOLITE	0 %	IF YES, COLOR?	BLUE	GRAY
			YELLOW	

OTHER FIBERS

SYNTHETIC FIBERS	%	BIREFRINGENCE	HIGH	
GLASS FIBERS	%		MEDIUM	
MINERAL WOOL	%		LOW	
CELLULOSE	%			

NON - FIBROUS COMPONENTS

BINDERS	20 %	REFRACTIVE INDICES:	PARALLEL	
PAINT/COATING	%		PERPENDICULAR	
AGGREGATE COARSE OR FINE	80 %	SIGN OF ELONGATION	POSITIVE	
VINYL	%		NEGATIVE	
MASTIC	%	EXTINCTION	PARALLEL	
PERLITE	%		OBLIQUE	
FOAM	%	MORPHOLOGY		
TOTAL	100 %			

MICROSCOPIST: DATE

RONALD M. COMBS JULY 12, 1995

INSPECTOR: DATE

B. BULLOCK JULY 5, 1995

ANALYSTS COMMENTS:

DISPERSION COLORS
YELLOW/YELLOW
MAGENTA/BLUE
YELLOW/BLUE
GOLD/BLUE

LAW ENGINEERING AND ENVIRONMENTAL SERVICES, INC.

4465 BROOKFIELD CORPORATE DRIVE
CHANTILLY, VIRGINIA 22021

CHAIN OF CUSTODY

379-5605

PROJECT: WOODBRIDGE RESEARCH FACILITY

LAW PROJECT:

CLIENT: HORNE ENGINEERING SERVICES, INC.

DATE: 7-5-95 for COD, 00401060 7-6-95 for vest.

INSPECTOR(S): BRYANT BULLOCK

BUILDING:

[illegible]

FIELD COLLECTION		1ST TRANSFER	2ND TRANSFER	DISPOSAL
NAME:	BRYANT BULLOCK	FACILITY:	LAW ENLG. ASB LAD	
SIGNATURE:	<i>[Signature]</i>	NAME:	Rm Long	
DATE:	7-11-95	SIGNATURE:	<i>[Signature]</i>	

REVISED MAY, 1995

APPENDIX C

The enclosed summary table shows the numerical results from the USAEC Asbestos checklist for every asbestos sample in each of the assessed areas. The Assessment Index value comes from the table at the back of the USAEC Asbestos Checklist. Note that the "percent asbestos" column is rated as a zero for all the materials in this report based of the criteria established in the USAEC Asbestos Checklist. According to the criteria all non-friable ACM is rated as a zero regardless of the actual percent asbestos. All of the materials in this report are non-friable. The laboratory analysis results with percentage asbestos in each material are shown in the tables in the body of the report.

The original checklist assessment categories correspond to the summary sheets. Th enclosed full version of the USAEC checklist explains the criteria for assessing each material sampled.

These 144 checklists (142 samples and two additional checklists for the 9"x9" floor tile assumed to contain asbestos) show how each material sampled was assessed by category. These checklists are shortened versions of the USAEC Asbestos Checklist eliminating the explanatory information to compress the six page original form to a single piece of paper. AEC approved the reduced version to make the checklist more convenient for field use and to save paper.

Checklist Results Tabulation

Woodbridge Research Facility USAEC Checklist Summary					Part I Damage Assess	Physical	Water	Prox to repair		Type ACM	Percent Asbestos	Damage Index	Part II Exposure Assess	Mat Friability	Accessibility	Activity/ Use	Air Stream	Visible Damage	Occupancy	Unoccupied Fac.	Exposure Index	Assessment Index
Sample Number	Building	Room	Description	A.Spray/Trowel				B.Pipe/duct insul														
A 001	102	NA	Painted Drywall and Joint Compound		0	0	0	0	0	0	0			0	4	2	1	0	1		8	F
A 002	102	NA	Tan Countertop Mastic		0	0	0	0	0	0	0			0	4	2	1	0	1		8	F
B 003	101	102	12"x12" Floor Tile (Gray with White and Gray Mottling)		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
B 004	101	102	12"x12" Floor Tile Mastic (Gray with White and Gray Mottling)		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
B 005	101	NA	12"x12" Floor Tile (Gray with White and Gray Mottling)		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
B 006	101	NA	Black Mastic from 12"x12" Floor Tile (Gray with White and Gray Mottling)		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
B 007	101	102	Drywall and Joint		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
B 008	101	103	2'x4' Ceiling Tile (Marble Pattern w/Pinholes)		0	1	0	0	0	0	0	1		0	4	3	1	0	2		10	F
B 009	101	NA	2'x4' Ceiling Tile (Marble Pattern w/Pinholes)		0	1	0	0	0	0	0	1		0	4	3	1	0	2		10	F
B 010	101	NA	6" Black Cove Molding		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
B 011	101	NA	Black Mastic from 6" Black Cove Molding		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
B 012	101	105	Duct Gasketing Material		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
C 013	211	315	2'x4' Ceiling Tile (Wormy Pattern w/Large Pinholes)		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
C 014	211	Hall	2'x4' Ceiling Tile (Wormy Pattern w/Small Pinholes)		0	1	0	0	0	0	0	1		0	4	3	1	0	2		10	F
C 015	211	307	Drywall and Joint		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
C 016	211	307	White Duct Glue		0	0	0	0	1	0	0	1		0	0	1	2	0	2		5	F
C 017	211	310	Troweled Window Material		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
C 018	211	307	4" High Brown Cove Molding		0	0	0	0	0	0	0			0	4	3	1	0	1		9	F
C 019	211	307	Black Mastic from 4" High Brown Cove Molding		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
C 020			Duplicate of C021									0									0	F
C 021	211	Hall	2'x4' Ceiling Tile (Random Mottled Pattern w/Small Pinholes)		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
C 022	211	310	12"x12" Floor Tile (Light Tan w/Brown Mottling)		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
C 023	211	310	Brown Mastic from 12"x12" Floor Tile (Light Tan w/Brown Mottling)		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
C 024	211	113	12"x12" Floor Tile (Beige w/Brown and White		0	0	0	0	0	0	0			0	4	3	0	0	2		9	F
C 025	211	112	Drywall and Joint		0	0	0	0	0	0	0			0	4	3	0	0	2		9	F
C 026	211	113	Fire Door Insulation		0	0	0	0	0	0	0			0	4	3	1	0	2		10	F
C 027	211	103	Brown Mastic from Wall		0	0	0	0	0	0	0			0	4	1	1	0	1		7	F
C 028	211	103	3'x3' Floor Tile		0	0	0	0	0	0	0			0	4	1	1	0	1		7	F
C 029	211	Mech. Room	Duct Gasketing Material		0	0	0	0	0	0	0			0	1	1	1	0	1		4	F

Checklist Results Tabulation

Woodbridge Research Facility USAEC Checklist Summary					Part I Damage Assess										Part II Exposure Assess										Exposure Index	Assessment Index
Sample Number	Building	Room	Description	Physical	Water	A.Spray/Trowel	B.Pipe/duct insul	Type ACM	Percent Asbestos	Damage Index	Mat Friability	Accessibility	Activity/ Use	Air Stream	Visible Damage	Occupancy	Unoccupied Fac.	Exposure Index	Assessment Index							
C 030	211	Mech. Room	Troweled Material on Ceiling	0	0	0	0	0	0	0	0	1	1	1	0	1		4	F							
C 031	211	Mech. Room	Boiler Jacket Insulation	0	0	0	3	0	0	3	0	1	1	1	0	1		4	F							
D 032	203	Main Ent.	12"x12" Floor Tile (Tan w/Orange, Brown, and White Mottling)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 033	203	Maint.	Black Mastic from 12"x12" Floor Tile (Tan w/Orange, Brown, and White Mottling)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 034	203	Main Ent.	Staircase Tread	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 035	203	Main Ent.	Mastic from Staircase Tred	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 036	203	117	Tan Plaster Base Material	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 037	203	117	White Drywall Material Over Tan Plaster	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 038	203	124	Brown Mastic from 12"x16" Acoustical Tile (3/8" Dot Pattern)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 039	203	124	12"x16" Acoustical Tile (3/8" Dot Pattern)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 040			Duplicate of D041							0								0	F							
D 041	203	124	2' x 2' Floor Tile	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 042	203	Main Ent.	6" Black Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 043	203	Main Ent.	Tan Mastic from 6" Black Cove Molding (Outer Layer)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 044	203	Main Ent.	Black Mastic from 6" Black Cove Molding (Inner Layer)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 045	203	108	Tan Plaster Base Material	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 046	203	108	White Drywall Material Over Tan Plaster	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 047	203	108	Drywall and Joint	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 048	203	102	Tan Duct Glue	0	0	0	0	0	0	0	0	0	1	1	0	2		4	F							
D 049	203	102	White Duct Glue	0	0	0	0	1	0	1	0	0	1	2	0	2		5	F							
D 050	203	102	Brown Mastic	0	0	0	0	0	0	0	0	0	3	1	0	2		6	F							
D 051	203	102	2'x4' Ceiling Tile (Mottled Pattern w/Small Pinholes)	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 052	203	125	4" Black Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 053	203	125	Brown Mastic from 4" Black Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 054	203	124	4" Brown Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 055	203	124	Brown Mastic from 4" Brown Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 056	203	225	Drywall and Joint	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 057	203	225	Plaster	0	0	0	0	0	0	0	0	0	3	1	0	2		6	F							
D 058	203	225	Black Duct Glue	0	0	0	0	1	0	1	0	0	3	2	0	2		7	F							
D 059	203	224	6" Black Cove Molding	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F							
D 060			Duplicate of D061							0								0	F							

Checklist Results Tabulation

Woodbridge Research Facility USAEC Checklist Summary					Part I Damage Assess	Physical	Water	Prox to repair		Type ACM	Percent Asbestos	Damage Index	Part II Exposure Assess	Mat Friability	Accessibility	Activity/ Use	Air Stream	Visible Damage	Occupancy	Unoccupied Fac.	Exposure Index	Assessment Index
Sample Number	Building	Room	Description	A.Spray/Trowel				B.Pipe/duct insul														
D 061	203	224	Brown Mastic from 6" Black Cove Molding	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 062	203	219	Brown Mastic from Corkboard	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 063	203	2nd Floor Hall	2'x4' Ceiling Tile (Mottled Pattern w/Pinholes)	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 064	203	2nd Floor Hall	2'x4' Ceiling Tile (Marbled Pattern w/Pinholes)	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 065	203	2nd Floor Hall	2'x4' Ceiling Tile (Wormy Pattern w/Pinholes)	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 066	203	210	Beige, Painted (2 coats) Drywall and Joint	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 067	203	205	Drywall and Joint	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 068	203	210	2'x4' Ceiling Tile (Mottled Pattern w/Pinholes)	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
D 069	203	202	Tan Pressboard	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 070	201	N106	2'x4' Ceiling Tile (Mottled Pattern w/Pinholes)	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 071	201	N106	2'x4' Ceiling Tile (Marbled Pattern w/Pinholes)	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 072	201	N106	Drywall and Joint	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 073	201	N106	Debris in Steamline Chase	0	0	0	0	0	0	0	0		0	0	1	1	0	2		4	F	
E 074	201	Lobby	12"x12" Floor Tile (Beige w/White and Gray Mottling)	0	0	0	0	1	0	1	1		0	4	3	2	0	2		11	E	
E 075	201	Hall	2'x4' Ceiling Tile (Pocked w/Small and Large Pinholes)	0	1	0	0	0	0	1	1		0	4	3	1	0	2		10	E	
E 076	201	Hall	Brown Mastic	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 077	201	N101A	4'x8' Primary Ceiling	0	0	0	0	0	0	0	0		0	0	1	1	0	2		4	F	
E 078	201	N101A	Tan Plaster Wall Material	0	0	0	0	0	0	0	0		3	4	3	1	0	2		13	F	
E 079	201	N101	Drywall Plaster Compound	0	0	0	0	0	0	0	0		3	4	3	1	0	2		13	F	
E 080			Duplicate of E081								0									0	F	
E 081	201	N101A	White Thermal System Pipe Sealant	0	0	0	0	0	0	0	0		0	1	1	1	0	1		4	F	
E 082	201	N107A	12"x12" Acoustical Tile (1/2" Dot Pattern)	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 083	201	N107A	Brown Mastic from 12"x12" Acoustical Tile (1/2" Dot Pattern)	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 084	201	N107A	2'x4' Ceiling Tile (Straight Wormy Pattern w/Small and Large Pinholes)	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	
E 085	201	N107B	2'x4' Ceiling Tile (Marbled w/Many Pinholes)	0	1	0	0	0	0	1	1		0	4	3	1	0	2		10	E	
E 086	201	N107C	2'x4' Ceiling Tile (Bone Colored, Marbled, w/Pinholes)	0	1	0	0	0	0	1	1		0	4	3	1	0	2		10	E	
E 087	201	N107	4" Black Cove Molding	0	0	0	0	0	0	0	0		0	4	3	1	0	2		10	F	

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Sample	Number	Building	Room	Description				A.Spray/Trowel	B.Pipe/duct insul													
E	088	201	N107	Brown Mastic from 4" Black Cove Molding	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	089	201	N109	6" Black Cove Molding	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	090	201	N109	Brown Mastic from 6" Black Cove Molding	0	0	0	0	0	0	0	0	0	3	4	3	1	0	2		13	F
E	091	201	N111	Plaster Wall	0	0	0	0	0	0	0	0	0	0	1	2	1	0	1		5	F
E	092	201	N101	Electrical Chase Debris	0	0	0	0	0	0	0	0	0	0	0	0	1	0	1		2	F
E	093	201	N116	Drywall and Joint	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	094	201	N118	Brown Mastic Above Ceiling	0	0	0	0	0	0	0	0	0	0	0	1	1	0	2		4	F
E	095	201	N118	12"x12" Floor Tile (Beige w/Brown and White	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	096	201	W154	Drywall and Joint	0	0	0	0	0	0	0	0	0	0	4	3	1	0	3		11	F
E	097	201	E157	4" Brown Cove Molding	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	098	201	E157	Mastic from 4" Brown Cove Molding	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	099	201	E157	Drywall and Joint	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	100			Duplicate of E101								0									0	F
E	101	201	E169	12"x12" White Acoustical Tile (1" Dot Spacing)	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	102	201	E169	Brown Mastic from 12"x12" White Acoustical Tile (1" Dot Spacing)	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	103	201	E166	12"x12" White Acoustical Tile (1/2" spacing)	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	104	201	E166	12"x12" Floor Tile (Beige w/White and Gray Mottling)	0	1	0	0	0	0	0	1	0	0	4	3	1	0	2		10	E
E	105	201	E166	Wall Plaster	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	106	201	E168	Particle Board Tan Mastic	0	0	0	0	0	0	0	0	0	0	4	3	1	0	1		9	F
E	107	201	E166	White Duct Glue	0	0	0	0	1	0	1	0	0	0	4	3	2	0	2		11	E
E	108	201	E166	Drywall and Joint	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	109	201	E166	Green Painted Wall Plaster	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	110	201	Hall (S120)	Drywall and Joint Compound	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	111	201	Hall (W148)	2'x4' Ceiling Tile (Mottled w/Pinholes)	0	1	0	0	0	0	1	0	0	0	4	3	1	0	2		10	E
E	112	201	W148	Painted Drywall and Joint Compound	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	113	201	W151	2'x4' Ceiling Tile (Pocked w/Small and Large Pinholes)	0	1	0	0	0	0	1	0	0	0	4	3	1	0	2		10	E
E	114	201	W140	4" Brown Cove Molding	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
E	115	201	Maint.	2'x4' Ceiling Tile (Wormy w/Large Pinholes and Woven Texture)	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
F	116	202	121	4" Black Cove Molding	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
F	117	202	121	Brown Mastic from 4" Black Cove Molding	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F
F	118	202	117	Gray, Fibrous Debris	0	0	0	0	0	0	0	0	0	0	1	1	1	0	1		4	F
F	119	202	115	Painted Drywall and Joint Compound	0	0	0	0	0	0	0	0	0	0	4	3	1	0	2		10	F

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Sample	Number	Building	Room	Description				A.Spray/Trowel	B.Pipe/duct Insul													
F 120				Duplicate of F121								0									0	F
F 121		202	103C	12"x12" White Acoustical Tile w/Small Pinholes		0	0	0	0	0	0	0		0	4	3	1	0	1		9	F
F 122		202	101	Drywall and Joint		0	0	0	0	0	0	0		0	4	2	1	0	1		8	F
F 123		202	101	12"x12" Floor Tile (Green and Gray w/White Streaks)		0	0	0	0	1	0	1		0	4	2	2	0	1		9	F
F 123A		202	101	Black Mastic from 12"x12" Floor Tile (Green and Gray w/White Streaks)		0	0	0	0	1	0	1		0	4	2	2	0	1		9	F
F 124		202	103C	Ceiling Material		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
F 125		202	114	4" Black Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
F 126		202	114	Brown Mastic from 4" Black Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
F 127		202	120	Drywall		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
G 128		210	NA	12"x12" Floor Tile (Beige w/Black & White Mottling)		0	0	0	0	0	0	0		0	4	1	1	0	1		7	F
G 129		210	NA	Tan Mastic from 12"x12" Floor Tile (Beige w/Black & White Mottling)		0	0	0	0	0	0	0		0	4	1	1	0	1		7	F
H 130		204	NA	Concrete Floor		0	0	0	0	0	0	0		0	4	0	1	0	1		6	F
H 131		204	NA	Concrete Ceiling		0	0	0	0	0	0	0		0	4	0	1	0	1		6	F
I 132		306	NA	12"x12" Floor Tile (Rust Color w/Brown and Cream Mottling)		0	0	0	0	0	0	0		0	4	2	1	0	2		9	F
I 133		306	NA	Mastic from 12"x12" Floor Tile (Rust Color w/Brown and Cream Mottling)		0	0	0	0	0	0	0		0	4	2	1	0	2		9	F
I 134		306	NA	Brown Stair Tread		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
I 135		306	NA	Brown Mastic from Brown Stair Tread		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
I 136		306	NA	4" Brown Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
I 137		306	NA	Mastic from 4" Brown Cove Molding		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
I 138		306	NA	Painted Drywall and Joint Compound		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
I 139		306	NA	Painted Drywall		0	0	0	0	0	0	0		0	4	3	1	0	2		10	F
X 140				Duplicate of X-141								0									0	F
X 141	NA	NA	NA	Culvert/Old Chimney		0	0	0	0	0	0	0		0	1	1	1	0	1		4	F
X 142	203	NA	NA	Thermal Insulation at South End Exterior		0	0	0	0	0	0	0		0	4	1	1	0	1		7	F
		101		General Assessment of All 9"x9" Floor Tile Assumed To Be ACM per the Scope of Work																		F
NA	NA	202	203	NA		0	0	0	0	1	0	1		0	4	3	2	0	2		11	F
NA	NA	203	108	9"x9" Floor Tile		0	2	0	0	1	0	3		0	4	3	2	1	2		12	F

10 Apr 95

USAEC GUIDELINES
FOR
ASBESTOS HAZARD ASSESSMENT
IN U.S. ARMY FACILITIES

Assessment Process

1. Assessment is used to determine if corrective action is needed, what corrective action to use and prioritizing the corrective actions.

a. Identify the type of Asbestos Containing Material (ACM) by taking bulk samples (i.e., wall board, pipe insulation, surface compound, etc.).

b. Evaluate the potential for fiber release (exposure potential).

c. Identify and assess the current condition of ACM using the following information:

1. Physical damage: If damage is present from vandalism, accidental physical contact or any other cause. Evidence of debris on horizontal surfaces, hanging material, dislodged chunks, scrapings, indentations, or cracking are indicators of poor conditions. If coated surface gives when slight hand pressure is applied or the material moves up and down with light pushing, then the ACM is no longer tightly bonded to its substrate.

2. Water damage: Inspect the area for visible signs of water damage, such as discoloration of or stains on the ACM; stains on adjacent walls or floors; buckling of the walls or floors; or areas where pieces of the ACM have separated into layers or fallen down, thereby exposing the substrate.

3. Deteriorating or delaminating from substrate: Inspect the area for quality of installation (i.e., separating into layers, adhesive failure) or environmental factors which affect the cohesive strength of ACM.

4. ACM in poor condition means the binding of the material is losing its integrity as indicated by peeling, cracking, or crumbling of the material.

d. Identify potential for future damage, disturbance, or erosion of material, including accessibility of material, frequency the area is used, activity likely to cause damage and any planned changes to the area.

e. Other important factors that must be included in the assessment of ACM are the inherent friability of the material, percentage of asbestos in the material, where material is located, number of people in the area, the duration of occupancy, location of ACM to air plenum or direct airstream and importance of the area.

In most cases the asbestos material is covered with a protective jacket of cloth, tape, paper, etc. These bonding materials will prevent the material from becoming friable and/or airborne.

a. Most non-friable materials can be broken without releasing significant quantities or airborne asbestos fibers.

2. Surfacing materials are usually bonded and will not become airborne unless disturbed (i.e. vibration, drilling, etc.).

3. The amount of ACM should be identified as linear feet or square feet.

f. All supporting building documentation should be included in the individual building reports (i.e., building drawings, sampling data, assessment data of homogenous materials, work sheets, etc.).

g. ACM checklists are provided in two parts (Figure 1a and 1b). Use this checklist for assigning risk and exposure numbers. Using the numbers derived from the checklists, enter the matrix in Table 1 and find the corresponding assessment index. Then refer to Table 2 for definition of assessment index. The higher risk and exposure numbers and assessment index letters should be used only if there is a high probability of personnel exposure.

h. Asbestos Management Program requirements are outlined in Chapter 10 of reference a.

i. Recommend following the guidance provided in Chapter 2 of reference b and Chapter 5 of reference c for conducting asbestos surveys.

j. Recommend following the guidance provided in Chapter 4 of reference b and Chapter 6 of reference c for factors involved in assessing ACM.

k. Recommend following the guidance provided in Chapter 6 of reference b and Appendix E for Sampling/Analytical Procedures.

l. The new key definitions reproduced from EPA Final Rule, "National Emission Standards for Hazardous Air Pollutants; Asbestos NESHAP Revision" are as follows:

1. Regulated Asbestos-containing material (RACM) means (a) Friable ACM, (b) Category I non-friable ACM that has become friable, (c) Category I non-friable ACM that will be or has been subjected to sanding, grinding, cutting, or abrading, or (d) Category II non-friable ACM that has a high probability of becoming or has become crumbled, pulverized, or reduced to powder by the forces expected to act on the material in the course of demolition or renovation operations.

2. Category I non-friable ACM means asbestos-containing packings, gaskets, resilient floor covering and asphalt roofing products containing more than 1 percent asbestos.

3. Category II non-friable ACM means any material, excluding Category I non-friable ACM, containing more than 1 percent asbestos that, when dry, cannot be crumbled, pulverized, or reduced to power by hand pressure.

4. Friable ACM is any material containing more than 1 percent asbestos by weight that hand pressure can crumble, pulverize or reduce to power when dry, as defined in the National Emission Standards for Asbestos (40 CFR 61.142). ACM with less than 1 percent is not regulated and does not require any action. If the Host Nation, State or Local Government's definition for ACM defers from the USEPA's regulation, the assessor should use the most stringent criteria.

5. Non-friable ACM is any material containing 1 percent asbestos by weight that hand pressure cannot crumble, pulverize or reduce to power when dry, as defined in the National Emission Standards for Asbestos (40 CFR 61.142).

References:

- a. AR 200-1, Environmental Protection and Enhancement
- b. EPA 560/5-85-024, Guidance for Controlling Asbestos-Containing Materials in Buildings
- c. TM 5-612, Asbestos Control
- d. Title 40, Code of Federal Regulations, Part 61, Subpart M
- e. National Emission Standards for Hazardous Air Pollutants

Figure 1a
USAEC ACM ASSESSMENT CHECKLIST

Installation:

Bldg/Rm No.:

Facility/Office:

Inspector name/date:

Part 1: DAMAGE ASSESSMENT

Physical. Assess damage based on evidence of surface accumulation; or the condition of the sprayed-on or trowelled-on surface materials; or physical deterioration or delamination of materials using hand pressure.

- ____(0)None * Non-asbestos materials; or no damage or evidence of material fallout; or material is in fair to good condition; or **non-friable** ACM, (i.e., floor tile, wallboard, etc.); or ACM with less than 1 percent.
- ____(1)Minimal * Isolated and very small areas (less than 10 percent) of material damage or fallout; or controlled space and accessed by maintenance personnel only; or uncontrolled/unoccupied space.
- ____(2)Low * Visible evidence of some surface accumulation; or controlled space and accessed by maintenance personnel only; or uncontrolled/unoccupied space.
- ____(3)Moderate* Visible evidence of small areas (less than 10 percent) of surface accumulation; or controlled space and accessed by maintenance personnel only; or uncontrolled/unoccupied space.
- ____(5)High * Visible evidence of widespread surface accumulation; or uncontrolled space and easily accessed by occupants.

Water.

- ____(0) None No water damage.
- ____(1) Minor Visible water damage (less than 10 percent) of ACM.
- ____(2) Major Visible water damage (greater than 10 percent) of ACM.

* Note: If any one or a combination of these criteria are met assign the corresponding value and line out the criteria that does not apply.

Proximity to items for repair. If both A and B apply, score the one with the highest rating. (Check all that apply. Maximum of 3 points.)

A. Sprayed-on or Trowelled-on: Could the **friable** ACM be damaged by routine maintenance activities ?

____(0) No routine maintenance is performed within the areas.

____(1) Equal to or greater than 5 ft.

____(2) Equal to or greater than 1 ft but less than 5 ft.

____(3) Less than 1 ft from routine maintenance areas or a ceiling panel contaminated with ACM must be removed.

B. Pipe, Boiler, or Duct insulation: Could damage occur as a result of routine maintenance or by occupants of building.

____(0) No.

____(3) Yes.

Type of ACM.

____(0) * Non-asbestos materials; or **non-friable** ACM, (i.e., floor tile, wallboard, etc.) in good to fair condition; or ACM with less than 1 percent.

____(1) Miscellaneous ACM (i.e. Ceiling tiles, etc).

____(1) * Boiler; or pipe insulation; or other ACM insulation materials (Not accessible to occupants).

____(2) Non-friable ACM (i.e., floor tile, wall board, etc.) in poor condition.

____(2) * Boiler; or pipe insulation; or other ACM insulation materials (Accessible to occupants).

____(3) * ACM on exterior of supply ducts; or capable of being introduced into air ducts (i.e. Deteriorated ACM located in area of air ducts; or above suspended ceilings).

____(4) * Sprayed-on; or trowelled-on surface ACM (Accessible to occupants).

* Note: If any one or a combination of these criteria are met assign the corresponding value and line out the criteria that does not apply.

Percent Asbestos.

____(0) Less than 1 percent ACM.

____(1) 1 to 30 percent ACM.

____(2) 31 to 50 percent ACM.

____(3) Greater than 51 percent ACM.

Note: If the percent asbestos content is less than 1 percent or **non-friable** asbestos (in good to fair condition) then the total for percent asbestos category will be zero (0).

DAMAGE (D) TOTAL____(Max 20,Min 0)

Bulk sample results should be reported using the following format:

Sample No.	Type Asbestos	%	Source
------------	---------------	---	--------

Analysis performed by
(Lab/Name/Date)_____

Figure 1b
USAEC ACM ASSESSMENT CHECKLIST
Part II: EXPOSURE ASSESSMENT

Material Friability. Defined by USEPA: "hand pressure can crumble, pulverize, or reduce to powder when dry."

- | | |
|-----------------------------|--|
| ____(0) Non-Friable | Material (i.e., Floor tile, wall board, Binder's, etc.) in good to fair condition. |
| ____(1) Low Friability | Material difficult to crumble by hand. |
| ____(2) Moderate Friability | Material fairly easy to dislodge and crush. |
| ____(3) High Friability | Material easily reduced to powder; or broken by hand. |

Occupant Accessibility to ACM Fibers.

- | | |
|---------------------------------|--|
| ____(0) Low Accessibility | * Materials are not exposed; or totally isolated by permanent barrier; or accessible only during infrequent, occasional maintenance activity; or no air flow from the friable insulating material location to occupants of the building, or storage areas. |
| ____(1) Moderate Accessibility* | Only a small percent of material exposed; or material above a suspended ceiling; or material contacted during maintenance or repair; or material exposed, but not accessible to activity of normal occupants. |
| ____(4) High Accessibility | * A large percent of material exposed; or material accessible to occupants; or airborne transport during normal activities. |

* Note: If any one or a combination of these criteria are met assign the corresponding value and line out the criteria that does not apply.

Activity/use.

- | | |
|------------------|---|
| ____(0) None | No Activity/Storage activities. |
| ____(1) Low | Infrequent maintenance activities only. |
| ____(2) Moderate | Frequent maintenance activities only. |
| ____(3) High | Normal occupant activities. |

Air Stream/Plenum.

- | | |
|-----------------|--|
| ____(0) None | No perceptible air flow in the room or area. |
| ____(1) Present | Air flow and no evidence of ACM present. |
| ____(2) Present | ACM is exposed to perceptible or occasional air streams. |
| ____(3) Present | * Air flow and evidence of ACM present in supply ducts/plenum; or recirculated; or subjected to routine turbulent; or abrupt air movement. |

Area of visible surface or damaged ACM.

- | |
|--|
| ____(0) Less than 10 cubic or linear feet (small areas should be repaired ASAP). |
| ____(1) 10 to 100 cubic or linear feet. |
| ____(2) 100 to 1000 cubic or linear feet. |
| ____(3) greater than 1000 cubic or linear feet. |

For Occupied Facilities Only.

Population. This involves defining average occupancy as the total number of building occupants and outside visitor traffic into a room or area during a 8 hour period. For example, a reception area in a DEH shop has 1 person assigned to the area. There are 15 individuals (including the receptionist) assigned to the building. They have approximately 240 customers (visitors) in the building during a 8 hour period. On average, each customer (visitor) is serviced and departs the building within 30 minutes.

* Note: If any one or a combination of these criteria are met assign the corresponding value and line out the criteria that does not apply.

(Outside visitors x time spent/8 hours) + building = Average
in area/room occupants occupancy

Example: ([240 visitors x 0.5 hours] / 8 hours) + 15 occupants = 30
.....Score as 2

____(1) Less than 9 or for corridors.

____(2) 10 to 200.

____(3) 201 to 500.

____(4) 501 to 1000.

____(5) Greater than 1001.

____(5) Medical facilities, youth centers, child care facilities,
or residential buildings, regardless of the population, will be
assigned to this category.

For Unoccupied Facilities Only.

____(0) No ACM or less than 1 percent

____(1) Non-friable ACM in good or fair condition.

____(2) Non-friable ACM in poor condition.

____(3) Friable ACM in good condition.

____(5) Friable ACM with visible evidence of damage.

EXPOSURE (E) TOTAL____(Max 26,Min 0) Inspection (Date)_____

Note: Provide any other relevant information on observations in
the space provided below. If additional space is needed attach
additional pages as necessary.

Table 1

Determination of an Assessment Index

Using the Damage and Exposure values derived from the checklist (Figure 1a and 1b), enter the matrix below and find the corresponding assessment index.

		<u>Exposure (4 < E < 28)</u>			
		26-20	19-15	14-8	7-1
Damage (1 < D < 17)	20-16	A	A	B	C
	15-10	A	B	C	D
	9-6	B	C	D	E
	5-1	C	D	E	F

Note: If D and/or E equal zero (0), then the assessment index of F will be assigned.

Table 2

<u>Assessment Index</u>	<u>Recommended Management Corrective Actions</u>
A	<u>Immediate Action</u> - Follow-up actions may include isolation of the area, the restriction of access and/or immediate removal of the ACM. If removal is indicated, action planning should include a detailed survey. This condition will require a near term expenditure of funds. Managers must know exactly what needs to be done to eliminate the asbestos hazard and how to use available funds most effectively.
B	<u>Action as Soon as Possible</u> - Initiate a Special O&M* program immediately. Possible follow-up actions may include limiting access to the area and scheduling of removal during periods of low activity in the facility, not waiting for the normal repair and maintenance cycle.
C	<u>Planned Action</u> -Initiate a Special O&M* program. Removal should be scheduled as part of normal repair and maintenance cycle of a facility, minimizing cost and disturbance.
D	<u>Repair</u> -Initiate a Special O&M* program. Damaged areas should be repaired, where "repair" means returning damaged ACM to an undamaged condition to contain fiber release.
E	<u>Monitoring</u> -Continue Special O&M* program. Take steps to prevent damage to the ACM. Monitor the condition of all ACM frequently.
F	<u>No Immediate Action</u> - Continue Special O&M* program until major renovation or demolition requires removal or until assessment factors change.

Assessment by accredited personnel* (in-house or contractor) who are experienced in and qualified to conduct asbestos assessments is required. Accredited personnel are Industrial Hygienists (American Board of Industrial Hygiene (ABIH) certified or who meet the Office of Personnel Management's 0690 classification standard) or other trained personnel with a minimum of 1 year experience in asbestos assessment activities and who are accredited in the specific area they will be responsible for (Inspector management Planner, abatement designer, contractor, supervisor, and abatement worker) as specified in the Toxic Substance Control Act (TSCA) 15 USC Section 2646 (b) (i).

* An enclosure or encapsulation will require an O&M plan to increase their effectiveness.